

TOP
LISTINGS
FOR THE
SPECTRUM AND ZX-81

Sinclair Programs

July 1984

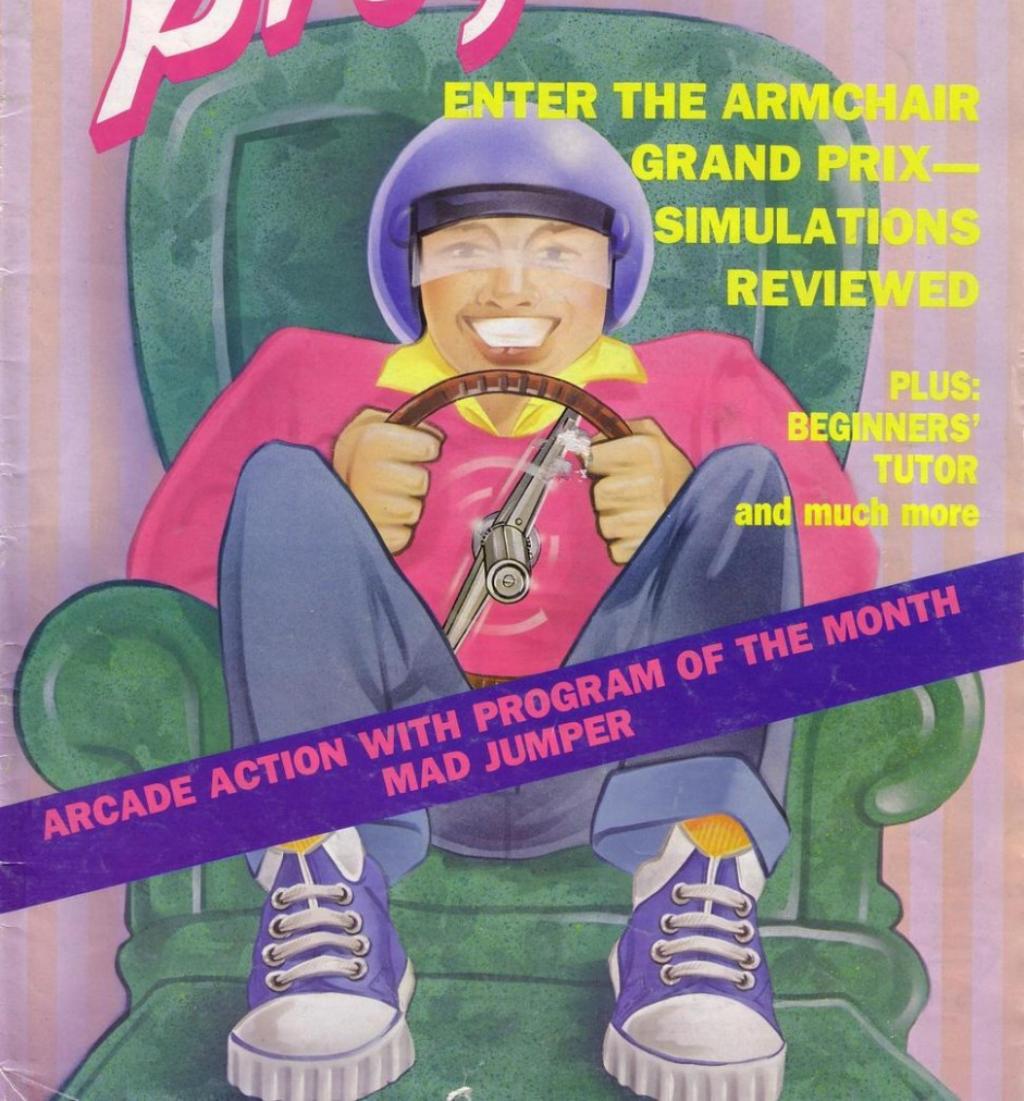
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SIMULATIONS
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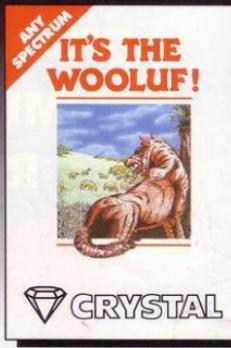
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TUTOR
and much more**

**ARCADE ACTION WITH PROGRAM OF THE MONTH
MAD JUMPER**



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Written by: Neil Mittershead,
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INVASION OF THE BODY SNATCHAS

Written by: Simon Brattel
and Neil Mittershead



Written by:
Graham Stafford



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Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

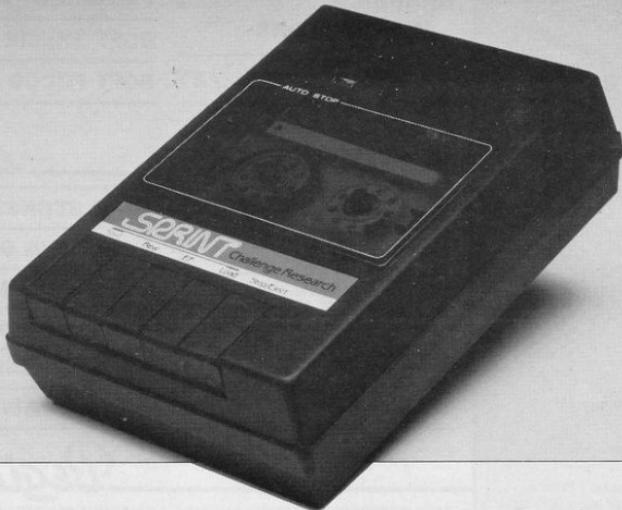
Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6isp" means six inverse spaces and "(g4;4†14;g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

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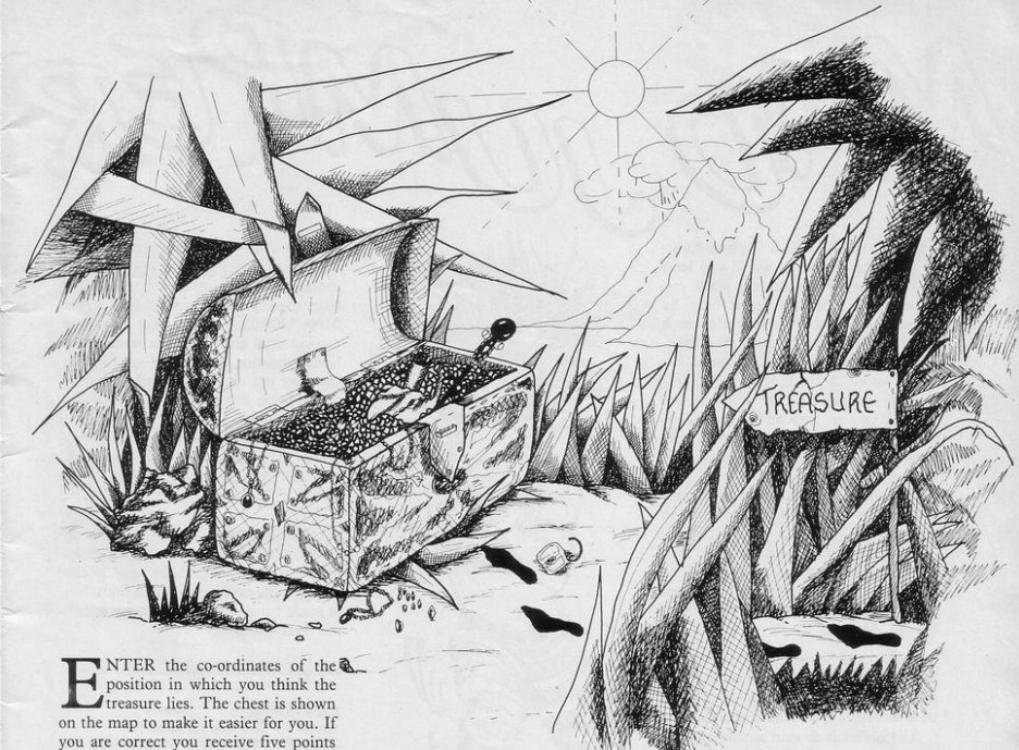
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CHALLENGE RESEARCH



ENTER the co-ordinates of the position in which you think the treasure lies. The chest is shown on the map to make it easier for you. If you are correct you receive five points but five points will be deducted for an incorrect guess. You must score 50 points for a successful quest and if your score falls below zero you will fail.

Treasure Quest was written for the 16K ZX-81 by Kenneth Moore, aged 13, of Glasgow.

TREASURE QUEST

```
1 LET SC=25
10 PRINT AT 5,23;"SCORE = ";SC
13 PRINT AT 7,22;"TREASURE"
15 PRINT AT 8,22;"ISLAND"
20 FOR F=1 TO 20
30 PRINT AT F,0;"■"
40 NEXT F
50 FOR N=1 TO 20
65 PRINT AT 20,N;"■"
60 NEXT N
65 FOR N=1 TO 20
70 PRINT AT 0,N;"■"
75 NEXT N
80 FOR F=1 TO 20
95 PRINT AT F,20;"■"
90 NEXT F
91 PRINT AT 3,5;"■"
92 PRINT AT 4,5;"■"
93 PRINT AT 5,5;"■"
94 PRINT AT 6,5;"■"
95 PRINT AT 7,5;"■"
96 PRINT AT 8,5;"■"
97 PRINT AT 9,5;"■"
98 PRINT AT 10,5;"■"
99 PRINT AT 11,5;"■"
100 PRINT AT 15,5;"■"
101 PRINT AT 15,7;"■"
107 PRINT AT 17,8;"■"
108 PRINT AT 13,13;"■"
109 PRINT AT 0,0;"■"
110 PRINT AT 0,5;"■"
112 PRINT AT 0,10;"■"
115 PRINT AT 0,15;"■"
117 PRINT AT 5,0;"■"
118 PRINT AT 10,0;"■"
119 PRINT AT 15,0;"■"
120 LET A=INT (RND*19)
125 LET B=INT (RND*19)
130 PRINT AT A,B;"■"
135 PRINT AT 21,0;"ENTER X CO-0
RDINATES"
140 INPUT X
145 PRINT AT 21,0;"ENTER Y CO-0
RDINATES"
150 INPUT Y
155 PRINT AT Y,X;"■"
160 IF Y=R AND X=B THEN PRINT A
T 21,0;"WELL DONE"
165 IF Y>R OR X>B THEN PRINT
AT 21,0;"HARD LUCK (TRY AGAIN)"
168 PAUSE 100
167 CLS
170 IF Y=R AND X=B THEN LET SC=
SC+5
175 IF Y>R OR X>B THEN LET SC=
SC-5
180 IF SC=50 THEN PRINT "WELL D
ONE YOU HAVE THE TREASURE"
183 IF SC=50 THEN STOP
185 IF SC<0 THEN PRINT "HARD LU
CK YOU HAVE NO TREASURE"
187 IF SC<0 THEN STOP
190 GOTO 10
```

MAD JUMPER

MAD JUMPER is a very addictive game in which you have to move along the walls collecting fruit you can reach only by jumping at it. Avoid the creature which follows you and watch your time limit. On reaching stage three the game becomes more difficult, as the ladders increase and the creature is able to fire at you if you are both on the same wall. Mind where you jump, as you knock off bricks when jumping and cannot land twice in the same place.

The program is in two parts to enable it to fit into the 16K Spectrum. Type-in the graphics program and SAVE it. Then type-in the main program and SAVE. Both programs can be SAVED by entering GOTO 9999. **Mad Jumper** was written by Henning Jon Grini of Bergen, Norway.

Never let it be said that it is impossible to write good games in Basic. After playing Mad Jumper for a time, it can be said that it is of commercial quality.

The object is to gain as many points as possible by collecting the fruit which is hanging from the roof. You do so by jumping about left to right or merely by moving in the mentioned directions. You can also go up and down ladders.

Things are not so easy, though, and the danger is the little monster which is constantly chasing you. Should you be touched, you lose a life.

It is one of those ladder types of game with five levels of playing area. If you jump and collect a piece of fruit, the ceiling, which is part of the floor above, disappears, and if you jump on to the weakened floor you will lose a life, so be careful where you jump.

Note that to avoid the monster, you can go off the screen left or right. Also there are ladders on the top and bottom levels which give a wrapround effect. So if you go up the top ladder, you will appear on the bottom.

You have only a certain amount of time to collect a fruit and that is displayed, together with your number of lives and the number of fruits to collect. After all the fruit has been collected for that stage, you move to the next where there will be more ladders and a laser base at each edge. Should the monster touch a base when you are on that level, a life is lost. It is possible to jump over the monster — good luck.



The program is in two parts. First, there is the start-up section which contains all the data for the user-defined graphics and machine code sound routines. Be very careful when entering this section, as some of the data is related to machine code; you could crash the machine if any of the numbers is incorrect. After the first part has been entered, save it to tape immediately.

Here is a very brief description of the main section. Line 100 sets up the main variables. Lines 370-377 are checks at higher stages of the game — stage three. Lines 393-400 are screen checks for the position of the monster and lines 400 to 409 read the keyboard and are part of a main loop — 370-420. Lines 500-1080 are checks on the screen position of the man and the routine is called only after he has been moved.

Lines 1115-1530 are a junction routine which caters for both left and right movement of the man — this is called from the keyboard entry routine. Lines 3100-3300 check and alter the time display and also alter the number of lives remaining. Lines 3500-3555 print the fruit but checks are made to see if the location is valid — i.e., is there a ladder there?

Lines 6004-6666 display the starting screen. The colour of MAD JUMPER and the line are changed at 6333 to 6666.

An interesting point about the program is that the data used to make up some of the UDGs is machine code. You can see the machine code in the game, as the explosion when a life is lost is made up of all the characters which are machine code.

MAIN ROUTINES

100	Sets up variables.
370-377	High-level routine.
393-400	Screen checks.
400-409	Read keyboard.
500-1080	Check man.
1115-1530	Check direction.
3100-3300	Print time.
3500-3555	Print fruit.
6004-6666	Display scores.
6888	Alternative coloured line as in score table.
8000-8100	Initial set-up routine.
8111-8166	Display playing area.
8177-8199	Start game tune.

VARIABLES USED

Arrays

- A () Holds top five scores.
- X\$() Holds top five score names.

String

- C\$ Holds the words 'MAD JUMPER' for the score screen.

- F\$ Used as one-character input buffer when entering name.

- G\$ Temporary store for high score name.

- K\$ Holds user-defined character whose address is a musical routine — caught fruit.
- L\$ Holds several men which are used in lives display.

- O\$ Holds user-defined character whose address is a sound routine — laser zap.

- T\$ Holds line display.

- U\$ Holds user-defined character whose address is a sound routine — all other sounds.

- Z\$ Holds status message — 'WELL DONE, NEW HIGH SCORE ...'.

Numeric

- A Used as FOR .. NEXT index as well as index for AT statements.
- C Holds CODE of object.

D Used as part of J, e.g., ATTR(E,J+D).
 E Used as index for column in ATTR, e.g., ATTR(x,E).

F Used in part of score formula as well as a decision switch, IF F=... .

G Numeric constant with value of 1.

H Flag variable used to determine whether symbol shift was pressed.

I Holds random number which is used as a pointer for the placing of ladders, fruit.

J As E but for row.

L Used as index for L\$ which holds number of lives.

N Counter in FOR . . . NEXT loop.

O Numeric constant with value of 0.

P Holds the number corresponding to the maximum number of ladders on any one line.

Q Fruit count-1.

R Holds random number corresponding to INK colour of object, fruit.

S Line position of man.

T Used as an index for TS

U Used as time counter, corresponding to U=T*x+8.

V Holds number corresponding to the stage the game has reached.

X Line position of chaser.

Y Column position of chaser.

Z Column position of man.

HI Holds run-time high score.

SC Holds current score.



```

1 INVERSE 0: BRIGHT 0: OVER 0
: FLASH 0: INK 6: PAPER 0: BORDER 0: CLS : N=2 FOR N#=USR "A" TO USR "U"+7
4 READ X, POKE N,X: NEXT N
100 DATA 60,24,126,153,24,36,66,195,-1,129,X,-1,129,X,B,60,24,67,28,60,24,31,144,184,252,19,2,252,184,144,240,192,96,80,72,6,B,239,X,68,60,126,118,126,60,0,0,16,B,42,127,X,x,62,28,24,126,-1,126,X,60,X,24,16,60,88,252,56,60,24,248,X,-1,144,-1,64,X,-1,200 DATA 1,30,6,19,-1,17,0,19,229,213,197,205,181,3,193,-99,225,35,16,244,201,0,0,1,X,0,0,0,0,0,0,0,29,63,-35,-29,9,15
500 PLOT 71,1054: DRAW 0,34: DRAW 14,-34: DRAW 14,34: DRAW 0,-34: PLOT 114,105: DRAW 18,55: DRAW 18,-55: PLOT 121,125: DRAW 22,0: PLOT 165,105: DRAW 0,34: DRAW 17,0: DRAW,-B: DRAW 0,-18: DRAW -7,-8: DRAW 17,0: DRAW 0,-18
600 PLOT 25,86: PLOT 20,0: DRAW 0,-44: DRAW -20,0: PLOT 20,0: DRAW 10,-0: PLOT 58,86: DRAW 0,-44: DRAW 24,0: DRAW 0,44: PLOT 91,-42: DRAW 0,44: DRAW 22,-44: DRAW 22,44: DRAW 0,-44: PLOT 144,42: DRAW 0,44: DRAW 22,0: DRAW 0,-22: DRAW 0,44: DRAW 22,0: DRAW 0,44: DRAW 22,0: PLOT 198,42: DRAW 22,0: DRAW 0,44: DRAW 22,0: PLOT 176,64: DRAW 14,0,-700 PLOT 207,42: DRAW 0,44: DRAW 22,0: DRAW,-22: DRAW -22,0: DRAW 22,-22: PRINT INK 7; AT 19,1; CHR# 127;"HENNING JON GRINI - JAN 1984"
800 INK 0: LOAD ""
9999 PAPER 7: INK 0: CLS : SAVE "MAD JUMPER" LINE 1

```

```

396 IF ATTR (X+1,Y)=56 THEN I F X<5 THEN LET X=X+1: GO TO 398
397 IF X=15 OR X=12 OR X=9 OR X=30 OR X=3 THEN LET Y=Y+W: IF Y=30 THEN LET D#=CHR# 152: LET W=-1
398 IF Y=1 THEN LET D#=CHR# 1
46: LET W=1 THEN IF Z=Y THEN G O TO 463
400 PRINT OVER 1: AT X,Y;D#
401 IF CODE INKEY#=120 THEN LET H=0: GO TO 1500
402 IF CODE INKEY#=122 THEN LET H=1: GO TO 1500
403 IF CODE INKEY#=88 THEN LET H=0: GO TO 2E3
404 IF CODE INKEY#=90 THEN LET H=1: GO TO 2E3
408 IF CODE INKEY#=111 THEN GO TO 1E3
409 IF CODE INKEY#=48 THEN IF ATTR (S-1,Z)=56 THEN PRINT AT S,Z; CHR# 145: LET S=S+1: IF S=0 THEN LET S=16
410 IF X=S THEN IF Z=Y THEN G O TO 4E3
411 PRINT AT S,Z; CHR# 144
412 IF K THEN GO SUB 3E3
415 PLOT U,7: DRAW 0,B: LET U=U-1: IF U<0 THEN FOR N=255 TO 0 STEP -3: BEEP .008,N/7: OUT 254, N: NEXT N: GO TO 4020
420 GO TO 400-0
500 IF ATTR (S-1,Z)=56 THEN PRINT AT S,Z; CHR# 145: GO TO 70
500 PRINT AT S,Z;" "
509 IF S=15 OR S=12 OR S=9 OR S=6 OR S=1 THEN RETURN
800 IF S=14 OR S=11 OR S=8 OR S=5 OR S=2 THEN LET S=S+1: LET Z=Z-H: IF NOT H THEN LET Z=Z+1
900 GO TO 410
1000 IF ATTR (S+1,Z)=56 THEN I F ATTR (S-1,Z)=56 THEN PRINT AT S,Z; CHR# 145: GO TO 1060
1014 IF ATTR (S+1,Z)=56 THEN P RINT AT S,Z;" ": GO TO 1060
1050 GO TO 410
1060 LET S=S+1
1070 IF S=1 THEN LET S=1
1080 GO TO 410
1515 GO SUB 500: IF NOT H THEN IF Z=30 THEN LET Z=1: GO TO 410
1517 IF H THEN IF Z=1 THEN LET Z=30: GO TO 410
1522 LET Z=Z+1
1522 IF H THEN LET Z=Z-2
1530 GO TO 410
2022 GO SUB 500: GO SUB 2500
2031 LET S=S-G: LET Z=Z+G
2033 IF H THEN LET Z=Z-2
2040 GO SUB 2700: GO SUB 2600
2044 PRINT INK 7; AT S,Z;" "
2045 GO SUB 2500: LET Z=Z+G
2063 IF H THEN LET Z=Z-2
2066 GO SUB 2700: GO SUB 2600
2068 PRINT INK 7; AT S,Z;" ": B
0 SUB 2500: LET Z=Z+G: LET S=S+G
2098 IF H THEN LET Z=Z-2
2099 IF ATTR (S+G,Z)=57 THEN L ET S=S-G: GO SUB 4030: LET S=S-G
: GO TO 4020
2120 GO TO 410
2500 IF NOT H THEN IF Z=30 THE N LET Z=G: LET Z=Z-G
2510 IF H THEN IF Z=6 THEN LET Z=30: LET Z=Z-G
2555 RETURN
2600 PRINT AT S,Z; CHR# 144: RA NDOMIZE USR USR N#: IF ATTR (S-G,Z)=56 THEN GO TO 410
2666 RETURN
2700 IF ATTR (S,Z)=56+R THEN L

```



```

ET SC=SC+U+0: LET K=0: LET F=F+G
: PRINT AT S,Z;"": RANDOMIZE
USR USR K#: PRINT AT 0,13-LEN
STRW SC; INVERSE G;SC: PRINT
INV G; AT J-G,E; CHR# 163: IF J=
2 THEN PRINT INV G; AT 16-E; C
HR# 163
2777 IF ATTR (S,Z)=57 THEN GO
SUB 4030: LET S=S+6: PRINT INV
7; AT S-G,Z;"": GO TO 4020
2800 IF F=0+V THEN POKE USR K#
+6,30: POKE USR K#+2,b; LET V=V-
G: LET Q=0+B: LET F=0: LET T=T-
2: LET S=15: RANDOMIZE: LET Z=
INV ( RND *2B)+2: LET X=3: LET Y
=15: LET L=L+6: GO TO B11
2900 RETURN
3000 PRINT INV 7; AT J,E;""
3100 LET K=0: IF F=0+V-G THEN P
OKE USR K#+G,10: POKE USR K#+
.99
3222 IF V=6 THEN PRINT PAPER 5
: AT 20,5; CHR# 138+" "+CHR#
133
3230 IF V>6 THEN PRINT PAPER 5
: AT 20,6;"": LET D=48: LET
T=0
3232 RANDOMIZE : LET U=127-0: PR
INT PAPER 5; AT 20,V;LET ( TD T)
3240 IF M THEN RETURN
3300 PRINT AT 20,22;0+V-F;""
3500 LET R= INT ( RND *4)+2: LET
C=146+R: LET E= INT ( RND *2B)+
2: LET D= INT ( RND *5): LET J=D
*3+2: IF ATTR ( J-E,E) <> 49 THE
R GO TO 3500
3500 IF ATTR ( J+2,E+6)=57 THEN
IF ATTR ( J+2,E+2)=57 THEN GO
TO 3500
3530 IF ATTR ( J,E+6)=57 OR ATTR
( J-E,G)=57 THEN GO TO 3500
3533 IF SCREEN# ( J,E) <> " " TH
EN GO TO 3500
3540 PRINT INV G*R: AT J,E; CHR
C
3555 RETURN
3600 INK 2: GO SUB 3700: INK 0
3610 POKE USR 0,,33: POKE USR
0#+6,156: RANDOMIZE USR USR 0#

```

```

: POKE USR 0#,233: POKE USR 0#
+6,201
3620 IF S=X THEN GO SUB 3700: G
D TO 403
3630 GO SUB 3700: RETURN
3700 PLOT 6,172-X*B: DRAW OVER
B+252,D: RETURN
4000 GO SUB 4030
4020 BORDER /: PRINT AT S,Z;" "
4022 LET L=L-G: IF S=X AND Z=Y T
HEN GO TO 4024
4023 PRINT OVER G; AT X,Y;D+
4024 IF ATTR ( S-G,Z)=56 THEN P
RINT AT S,Z; CHR# 145
4025 PRINT AT 18,L+22+" ": FOR
N=0 TO 100: NEXT N: IF L=0 THEN
GO TO 4033
4028 LET M=G: GO SUB 3222
4029 RANDOMIZE : LET M=0: LET S=
15: LET Z= INT ( RND *2B)+2: LET
X=3: LET Y=15: GO TO B177
4030 POKE USR N#+5,3: FOR N=154
TO 163: RANDOMIZE USR USR N#:
PRINT INK G; AT S,Z; CHR# N: N
EXT N: POKE USR N#+5,G: RETURN
4032 POKE 23658,B1: IF SC>HI THEN
LET HI=SC: PRINT AT 0,30-LEN
STR# HI: FLASH GHI
4040 FOR A=6 TO 5: IF SC <= A(A)
THEN NEXT A: GO TO 6E3
4044 FOR N=0 TO 300: NEXT N
4100 LET X=G: LET Y=30
4106 FOR N=0 TO 0_6
4111 PAUSE G; PRINT INK N: AT 2
0,G;Z(X TO Y)
4122 LET Y=Y+G: LET X=X+G: IF Y=
LEN Z+G THEN GO TO 4141
4140 NEXT N: GO TO 4106
4141 IF M THEN RETURN
4199 IF A < 5 THEN FOR B=5 TO
A+G STEP -G: LET X#(A)=X#(B):
LET A(B)=A(B-G): NEXT B
4211 LET G=""": FOR N=6 TO 15
4215 PRINT FLASH G; AT 20,+15+;
CHR# 67: PAUSE 0: LET F#=INKEY
#: IF CODE F#=13 THEN GO TO 4
277
4222 IF CODE F#=12 AND N=6 THEN
GO TO 4211
4225 IF CODE F#=12 THEN LET N=
N-G: PRINT AT 20,15+N;"": LET
G#=G#( TO LEN G#-G): GO TO 421
5
4233 IF CODE F#=33 OR CODE F#=
91 THEN LET F="""
4244 PRINT AT 20,15+N;"": LET
G#=G#( TO LEN G#-G): GO TO 421
5
4255 LET G#=G#+F#: NEXT N
4277 LET X#(A)=G#: LET A(A)=SC
4288 LET Z=""": NAME PLEASE! "+ CH
R# 143+G#+ CHR# 143+" "
: LET M=G: G
0 SUB 4100
6000 FOR N=G TO 18: PRINT AT N,
0; CHR# 143+" "+CHR# 143: NEXT N
6004 FOR N=0 TO 23: PRINT INK 3
: AT 5,N; CHR# 163: NEXT N: FOR
N=12 TO 19: PRINT INK 3; AT 13,
N; CHR# 163: NEXT N
6005 PLOT 30,86: DRAW 195,0: DRA
W 0,43: DRAW -195,0: DRAW 0,-43
6006 PLOT 3B,30: DRAW 180,0: DRA
W 0,35: DRAW -180,0: DRAW 0,-35:
PLOT 12B,30: DRAW 0,35
6010 LET C="MAD JUMPER": PRINT
AT 2,3; CHR# 147: AT 2,28; CHR#
164: INK G; AT 4,8; "TODAY'S GRE
ATEST": AT 12,12;"USE KEYS"
6014 FOR A=6 TO 5: PRINT AT 5+A
,41+A; "0,0000": NEXT A: FOR A=6
TO 5: IF A(A) THEN PRINT AT 5+A
,13; X#(A): AT 5+A,12-LEN STR#
A(A):NEXT A
6144 PRINT AT 14,5;"0.....UP"
: AT 15,5;"0.....DOWN": AT 16,5;

```

".....LEFT"; AT 17,5;"X.....RIGHT"
T#
6155 PRINT AT 14,20;"Push": AT
16,17;"and Z or X"; AT 17,18;"to
jump"; AT 15,17;"CAPS SHIFT"
6222 PRINT BRIGHT G; AT 20,G;"
Press ENTER to start
"NAME PLEASE!
E! "+ CHR# 143+" "
8090 RESTORE 8090: RANDOMIZE : R
EAD W,S,Z,M,F,K,L,SC,D,T,X,Y,V,T
#,D,N#: DATA 0,15, INT (* RND *2
B)+2,0,0,0,2,0,8,14,,15,B,"
CHR# 146, CHR# 78
8098 LET QT= CHR# B1: LET Z#"
WELL DONE! YOU HAVE REACHED ONE OF
TODAY'S HIGHEST SCORES.
"NAME PLEASE!
E! "+ CHR# 143+" "
8099 DIM L\$(10): FOR N=6 TO 10:
LET L\$(N)=CHR# 144: NEXT N
8100 PRINT INVERSE G; AT 0,G;"
SCORE=00000 ST1 HIGH=00000"
8111 PRINT AT 0,30-LEN STR# H
I: INVERSE G;HI: AT 0,17;V
8112 FOR N=3 TO 15 STEP 3: PRINT
AT N,G;"
"; INK 7; AT N-G,G;" "
T N
8125 FOR N=G TO 16 STEP 3: FOR J
=2 TO 29: PRINT INK G; PAPER 6;
AT N,J; CHR# 153: NEXT J: NEXT N
8127 FOR N=3 TO 15 STEP 3: PRINT
AT N,0; CHR# 138: AT N,1; CHR#
133: AT N-0,1; CHR# 138: AT N-
G,1; CHR# 133: NEXT N
8133 FOR N=G TO 30: PRINT INVER
SE G; AT 17,N; CHR# 163: NEXT N:
PRINT AT 18,G("((TIME)))")"
+ CHR# 143+"LIVES": "AT
18,22;L\$(TO L); AT 20,16;"FRUI
T": "INVERSE G; AT 20,G;
"
8144 IF V>2 THEN FOR N=3 TO 15
STEP 3: PRINT AT N,0; CHR# 147;
AT N,31; CHR# 164: NEXT N
8148 LET P=Vt: IF V>2 THEN LET P
=2: IF V>5 THEN LET P=V-3: LET
Q=0-4
8150 RANDOMIZE : FOR J=6 TO P: L
ET I= RND *27+2: FOR N=6 TO 3: P
RINT AT N,I; CHR# 145: NEXT N:
PRINT AT 16,I; CHR# 145: FOR N=
4 TO 15 STEP 3: LET I= RND *27+2
: PRINT AT N,I; CHR# 145: AT N+
4,I; CHR# 145: AT N+2,I; CHR# 14
5: NEXT N: NEXT J
8155 IF V>4 THEN FOR J=5 TO V:
FOR N=2 TO 17 STEP 3: LET I= RND
*27+2: IF ATTR (N,I)=63 THEN
PRINT INK G; AT N,I; CHR# 127:
OVER G; CHR# 0; CHR# 99: NEXT N
8166 NEXT N: NEXT J: GO SUB 3100
8177 POKE USR N#+5,17: RANDOMIZ
E USR USR N#: POKE USR N#+5,G
8199 GO TO 400
9999 PAPER 7: INK 0: CLS : SAVE
"mad jumper" LINE 1

FUTURE WAR

FUTURE WAR is a game of strategy which requires thought and cunning. The computer force is shown on the left of the screen and the white force on the right is the one you move. Each force has 11 pieces made up of 10 lasers and a king. There are also some shields which can be moved by either player.

You have to input three characters to move. The first decides which column of shields to move, the second the direction in which they will move and the third determines the laser to be fired. Remember that although you move first, the computer always fires before you and also that your king will move in the opposite direction to the shields. If a shield is directed to move off the bottom of the field it will appear at the top and vice versa. Your king is able to fire, so if you shoot at one of your own lasers it will be lost.

Future War was written for the 16K ZX-81 by Jerome Laskowski, of London SE6.

```

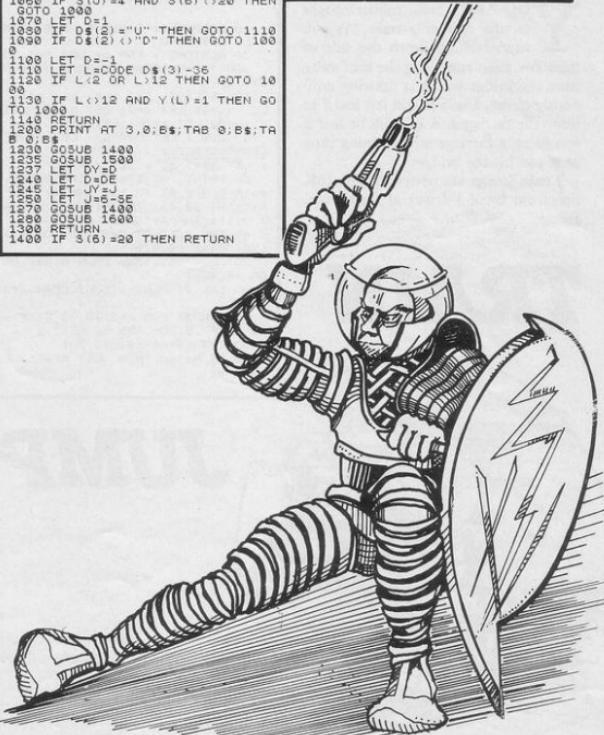
720 LET LK=E-1
720 LET KU=LN(L)+1+Y(L)-E(L)
740 IF KY=L THEN LET KU=KU+1
750 LET DE=-1
750 LET D=LN(L)+1+Y(L)-E(L)
770 IF KY=L THEN LET KD=KD+1
780 LET DE=DE+1
780 LET KU=KU+OK OR (KU>KO AND INT(RND+.2))
780 LET DE=DE+1 THEN LET DE=-1
800 LET BEST=50
800 LET BES=50
800 LET USE=(1-E(L))+(-5+3*Y(L)-N(L))
830 IF (BES*(KY-L))<1 OR ABS(BES*(KY-L))<1 THEN LET USE=0
830 LET BES=USE*VALUE+3
840 IF VALUE<BEST THEN GOTO .830
840 LET BES=USE*2 AND INT(RND+.2)
840 THEN GOTO .830
850 LET F=0
850 LET BEST+>VALUE
850 LET EX=0
850 LET E=0
850 IF E*(KE+DE)=1 AND N(KE+DE)=1
850 AND (Y(KE+DE)=0 OR (Y(KE+DE)=1
850 AND S(KE+DE)=0)) THEN LET F=12
850 LET S=INT(RND+.2)
850 IF S=(5-S(E))#4 AND S(5-E)>20 T
850 HEN GOTO .830
850 RETURN
850 PRINT AT 20,0;"INPUT : SHIEL
850 DIRECTION LASER : " 5-1
850 U OR D : " 5-1
850 INPUT DS
850 DS=DS*20,0,C$;TRB$0,C$;
850 LET DS=D*3 THEN GOTO .830
850 IF D$(1)"/1" OR D$(1)"/0" T
850 HEN GOTO 1000
1405 PRINT AT 8,12+J,CHR$(3+(I-1-
1405 D)*64);RT 12+J,CHR$(3+(I-1-D)*
1410 LET TOP=13-(S(D)+5*.5)
1410 LET J=TOP-1
1420 FOR K=TOP TO 50 STEP 1
1420 LET K=K+1
1425 IF K=N(K) OR K=K+D,J) THEN G
1425 GOTO 1440
1430 IF N(K)=N(K)+1
1430 IF N(K)+D,J)=N(K,J) THEN L
1430 E=N(K)-2
1430 IF N(K)+D,J)=S(K+D,J)
1430 IF K=TOP THEN PRINT AT K-5
1430 AR(K)
1430 NEW K
1430 LET N(BOT+D,J)=S(TOP,J) TH
1430 EN GOTO 1470
1430 LET N(BOT+D,J)=S(BOT+D)+1
1430 LET N(BOT+D,J)=S(BOT+D,J) TH
1430 EN LET N(BOT+D,J)=S(BOT+D)
1430 LET R(S(BOT+D,J)=S(TOP,J)
1430 PRINT HT BOT+D+5,15,R(BOT+
1430 PRINT AT 6,13;"-----";AT 17
1430 RETURN
1500 PRINT AT 5+KY,24;" "
1500 LET KY=KY+D
1500 IF KY>24 THEN LET KY=1
1500 IF KY=13 THEN LET KY=2
1570 PRINT AT 5+KY,24,R$;
1570 PRINT AT 5+KY,24,R$;
1570 PRINT AT 5+KY,5;" "
1520 LET KE=KE+D
1520 IF KE>24 THEN LET KE=1
1520 IF KE=13 THEN LET KE=2
1520 PRINT AT 5+KE,5;0
1520 RETURN

```

```

15 FAST
16 RAND 0
17 DIM E(12)
18 DIM D(12)
19 S(7)
20 LET V=(12)
21 DIM P(12,5)
22 DIM T(5)
23 DIM C(32)
24 LET LASERS=5
25 LET LHSEAS=10
26 LET L=1
27 LET Y$="."
28 LET Y$="."
29 LET Y$="."
30 GOSUB 490
31 GOSUB 500
32 GOSUB 1000
33 GOSUB 1200
34 GOSUB 1300
35 GOSUB 1400
36 GOSUB 1500
37 GOSUB 1600
38 GOSUB 1700
39 GOSUB 1800
40 GOSUB 1900
41 GOSUB 2000
42 GOSUB 2100
43 GOSUB 2200
44 GOSUB 2300
45 GOSUB 2400
46 GOSUB 2500
47 GOSUB 2600
48 GOSUB 2700
49 GOSUB 2800
50 GOSUB 2900
51 GOSUB 3000
52 STOP
53 PRINT TAB 7;"<<< FUTURE WAR >>>"
54 LET R=$000
55 PRINT AT 4,12;"SHIELDS";TAB 13
56 45421:LET TAB 13=1
57 LET X=INT(RND*176)+CHR$ 18
58 LET R=CHR$(RND*10+2)
59 LET KE=INT((RND*10+2)*
60 LET KY=INT((RND*10+2)*
61 LET (X-KY)/2-INT((KY-KE)/
62 THEN GOTO 460
63 FOR J=1 TO 5
64 LET P=1
65 LET P=INT((RND*10+2)
66 LET P=INT((RND*10+2)
67 IF A$(P,J)!="I" THEN GOTO 51
68
69 LET R=P,(J)=I"
70 LET N(P)=N(P)+1
71 NEXT J
72 FOR K=2 TO 11
73 LET L=CHR$(K+164)+""
74 LET L=L+CHR$(K+36)
75 PRINT TAB 8;L
76 LET X=$+";$+
77 LET X=$+";$+
78 LET X=$+";$+
79 PRINT TAB 13;"-----";TAB 13
80 5421:LET TAB 24;"UR UR UR UR"
81 PRINT AT 5,4;TAB 13
82 PRINT AT 5,4;TAB 13
83 PRINT AT 5,4;TAB 13
84 PRINT AT 5,4;TAB 13
85 SLOW
86 RETURN
87 LET N(1)=N(11)
88 LET N(12)=N(2)

```



```

1700 LET RANGE=0
1710 LET RS=0
1720 LET FP=F
1730 IF FP=0 THEN RETURN
1740 LET RANGE=3
1750 LET RS=-3
1760 LET FP=0
1770 LET RS=0
1780 LET K$=$(FP)
1790 IF N(FP)=0 THEN GOTO 1920
1800 FOR I=0 TO 5
1810 IF RS(FP,K)=="I" THEN GOTO 1
1820 NEXT K
1830 LET N(FP)=N(FP)-1
1840 LET LOSS=10*K
1850 LET LOSS=LOSS+K
1860 LET RS(FP,K)=RS(FP,K)+K
1870 LET RS(FP,K)=RS(FP,K)-K
1880 LET S(K)=S(K)+1
1890 LET S(S)=S(S)+1
1900 LET S(S)=S(S)+1
1910 GOTO 1930
1920 IF FP=0 THEN GOTO 1990
1930 LET RANGE=RANGE+13
1940 LET LOSS=80
1950 LET RS=0
1960 IF FP=1 THEN LET Y(1)=1
1970 IF FP=2 THEN LET Y(12)=1
1980 IF FP=3 THEN LET Y(1)=2
1990 IF FP=4 THEN LET Y(1)=2
2000 LET LASERS=100
2010 LET LASERS=LASERS+8
2020 LET LASERS=LASERS+8
2030 LET LASERS=LASERS+8
2040 LET LASERS=LASERS+8
2050 GOTO 2500
2060 LET RANGE=RANGE+16
2070 LET K$=$(FP)
2080 IF K$=0 THEN GOTO 2030
2090 LET LOSS=500
2100 LET RS=0
2110 LET Y(1)=2
2120 LET Y(1)=2
2130 LET S(1)=1 TO RANGE
2140 GOSUB 2000
2150 RETURN
2160 FOR I=0 TO RANGE
2170 LET RS=0*I TO RANGE
2180 FOR I=0 TO 15
2190 PRINT AT 5,FP;13;K$;AT 5+FP
2200 PRINT AT 5,FP;13;K$;AT 5+FP
2210 PRINT AT 5+FP,10+RS;E$  

2220 NEXT T
2230 RETURN
2240 LET RS=0
2250 LET RS=0
2260 LET RS=0
2270 LET RS=0
2280 LET RS=0
2290 LET RS=0
2300 LET RS=0
2310 LET S(K)=S(K)+1
2320 LET S(S)=S(S)+1
2330 LET S(S)=S(S)+1
2340 LET S(S)=S(S)+1
2350 IF E(L)=1 THEN GOTO 2450
2360 LET RANGE=RANGE+13
2370 LET GRIN=100
2380 IF L=11 THEN LET E(1)=1
2390 IF L=2 THEN LET E(12)=1
2400 LET ELASERS=ELASERS-1
2410 IF ELASERS=0 THEN LET Y(1)=
2420 GOTO 2500
2430 LET RANGE=RANGE+16
2440 IF KE=L THEN GOTO 2490
2450 LET GRIN=1000
2460 LET S(1)=1000
2470 LET RS=-5
2480 LET F$=$(1 TO RANGE)
2490 LET RS=0
2500 RETURN
2510 PRINT AT 20,0;"WAR OVER - Y
2520 LOSER"
2530 LET GRIN=1000 OR ELASERS=0 T
HEN PRINT AT 20,15;"WIN"
2540 PRINT TAB 6;"WORLD RECORD R
2550 PRINT TAB 6;"BARTON'S RECORD"
2560 PRINT TAB 6;"BARTON'S RECORD"
2570 PRINT TAB 6;"BARTON'S RECORD"
2580 PRINT TAB 6;"BARTON'S RECORD"
2590 PRINT TAB 6;"BARTON'S RECORD"
2600 PRINT TAB 6;"BARTON'S RECORD"
2610 PRINT TAB 6;"BARTON'S RECORD"
2620 PRINT TAB 6;"BARTON'S RECORD"
2630 PRINT TAB 6;"BARTON'S RECORD"
2640 RETURN

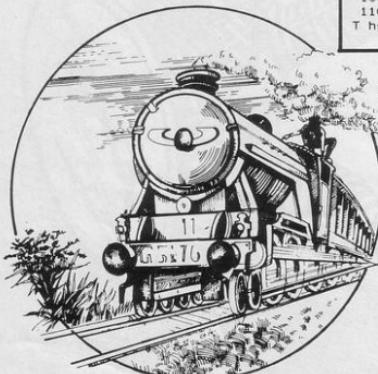
```



YOU ARE a train robber caught on the roof of a train. As you cannot climb down the side of train you must run along the roof away from the bridge which is drawing ominously closer. Use 5 to run left and 7 to jump the carriages. A life will be lost if you jump a carriage at the wrong time or if you hit the bridge.

Train Jump was written for the 16K Spectrum by P J Irwin of Sherborne, Dorset.

TRAIN



JUMP

```

10 BORDER 0; PAPER 0; CLS : IN
K : LET hs=0
20 RESTORE : FOR q=USR "a" TO
USR "e"+7: READ s: POKE q,s: N
EXT q
30 LET a=3: LET b=4: LET c=1:
LET cs=0: LET e=0: LET h=0: LET
l1=3: LET p=19: LET sc=0
40 CLS : LET n$$="D": LET t$$="E
DEDEDEDEDCB
: LET e$$="BC": LET c$$="DE"
50 PRINT AT 14,11; INK 3;"Liv
estA A A"; AT 10,11; INK 4;"Scor
ei"; AT 12,11; INK 4;"High :"; A
T 0,11; INK 6;"Train Jump"
60 INK 4; PLOT 248,136: DRAW 0
,24: DRAW -4,4,1
70 PLOT 252,136: DRAW 0,24: DR
AW -4,4,-1
80 INK 2; PLOT 0,135: DRAW 245
,0
90 INK 5: FOR z=3 TO -3 STEP -
1: BEEP .5,20- ABS z: NEXT z
100 LET t$$=t$$+t$: (TO 30)
110 IF hs<sc THEN LET hf=1: LE
T hs=sc

```

```

120 PRINT AT 10,17; INK 4;sc;
AT 12,17; FLASH hf; INK 4;hs
130 PRINT AT a,b; INK hf;"A"
140 PRINT AT 4,0;t#
150 IF e>0 THEN LET ee=e-1-(e=3
):#4: IF e<0 THEN LET n$$=e$$(#e
): GO TO 180
160 IF c=2 AND RND >(p/20) THE
N LET c=0: LET e=1: LET n$$=e$$(1
): GO TO 180
170 LET c=c+1-(c=2)*2: LET n$$=c
:#c)
180 BEEP (p/200)+.001,0-(p/2)

```

```

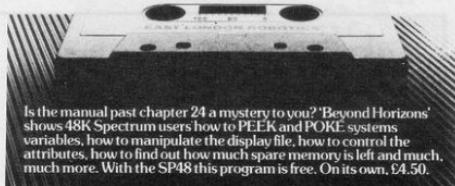
190 LET a1=a: LET b1=b
200 IF a<3 THEN LET a=3: GO TO
250
210 IF INKEY$ =?" " THEN LET a=
a-1: BEEP .005,30: GO TO 250
220 IF INKEY$ =?" " THEN GO TO
250
230 LET b=b+1: LET sc=sc-1
250 IF a=3 AND t(b)=" " THEN
LET l1=liv-1: LET a2=2: PRINT A
T 14,17+liv+2: " "; BEEP 1,-30: I
F liv=0 THEN GO TO 300
260 IF b=31 THEN LET liv=0: BE
EP 1,-30: PRINT AT 14,17;" "
: GO TO 300
270 LET sc=sc+1: IF (sc+1)/20=
INT ((sc+1)/20) THEN LET p=p-1+
(p=0)
280 IF a <> a1 OR b <> b1 THEN
PRINT AT a1,b1;" "
290 GO TO 100
300 FOR z=1 TO 6
310 DIM i$(704): PRINT AT 0,0;
OVER 1; INK z;i$: BEEP z/10,-z*
z: NEXT z
320 INPUT "ENTER y/n to play
again": LINE z$: IF z$$="n" THEN
STOP
330 FOR z=30 TO -30 STEP -1: BE
EP .01, ABS z: NEXT z: GO TO 30
900 DATA 24,24,128,254,24,40,38
,96,0,B,136,252,252,254,255,48,0
,192,60,63,63,63,255,24,0,252,14
,6,146,242,254,255,24,0,63,100,10
,0,127,127,255,12

```

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Is the manual past chapter 24 a mystery to you? 'Beyond Horizons' shows 48K Spectrum users how to PEEK and POKE systems variables, how to manipulate the display file, how to control the attributes, how to find out how much spare memory is left and much, much more. With the SP48 this program is free. On its own, £4.50.

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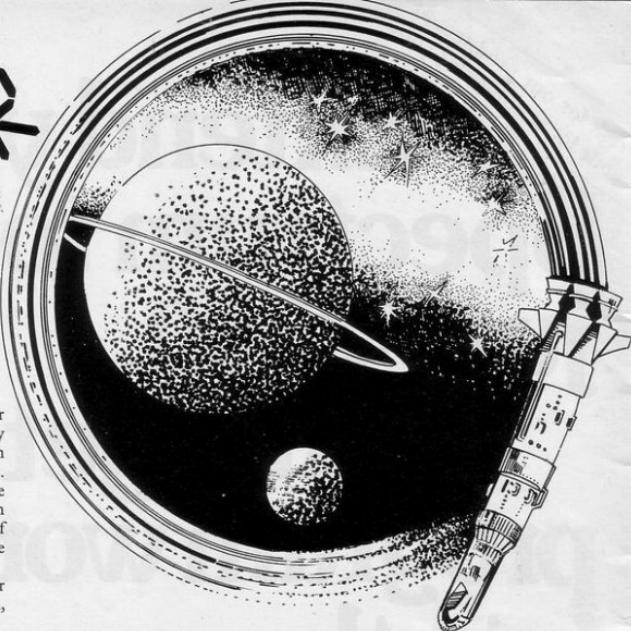
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STAR COLLECTOR



TRAVEL through space in your craft collecting satellites by flying over them. Extra fuel can be gained by hitting the fuel dumps. Forcefields appear from time to time and they have only one gap through which you can pass. If you run out of fuel or hit a forcefield you will hurtle through space and the game will end.

Satellite Collector was written for the 16K ZX-81 by Ian Dando of Leigh, Lancs.

```

1 LET HISCORE=0
2 LET H$="?????????"
3 PRINT AT 0,10;"STARFLIGHT";
4 PRINT AT 1,10;"AT 3,0;"IN
THIS GAME YOU HAVE TO COLLECT SAT
ELITES (0) IN YOUR CRAFT. AS
TIME GOES BY YOUR FUEL GETS LOW
ER, YOU CAN GAIN EXTRA FUEL BY HIT
TING THE FUEL DUMPS (1). ALSO
FORCEFIELDS APPEAR EVERY SOONFT
EN WITH ONLY 1 GAP IN THEM. TH
GAME ENDS IF YOU HIT A F
ORCEFIELD OR RUN OUT OF FUEL.
USE KEYS 5 AND 8."
5 PAUSE 4E4
6 LET X=15
7 LET FUEL=50
8 RAND
9 LET SCORE=0
11 CLS
30 PRINT AT 21,INT (RND*30)+1;
"O"
35 IF RND<.05 THEN GOSUB 200
37 IF RND<.02 THEN GOSUB 300
40 PRINT AT 5,X;
50 IF PEEK (PEEK 16398+256*PEE
K 16399)=52 THEN LET SCORE=SCORE
+10
55 IF PEEK (PEEK 16398+256*PEE
K 16399)=141 THEN LET FUEL=FUEL+
30
56 IF PEEK (PEEK 16398+256*PEE
K 16399)=128 THEN GOTO 900
60 PRINT "O"
65 PRINT AT 5,X; ""
70 LET X=X+(INKEY$="8")-(INKEY
$="5")
80 PRINT AT 5,X;""
90 SCROLL
95 LET FUEL=FUEL-1
96 IF FUEL<0 THEN GOTO 1000
100 GOTO 30
200 PRINT AT 21,INT (RND*30)+1;
" "
220 RETURN
300 SCROLL
305 PRINT ..
310 PRINT AT 21,INT (RND*30)+1;
" "
320 RETURN

```

```

500 FOR F=6 TO 21
510 PRINT AT F,X; ""
515 PRINT AT F,X; "."
520 PRINT AT F,X; ","
525 NEXT F
530 FOR F=1 TO 25
540 PRINT AT 21,X-1; "."
545 PRINT AT 21,X-1; ","
550 PRINT AT 21,X-1; ".000"
555 NEXT F
560 PRINT AT 21,X-2;"CRUMPS"
565 FOR F=0 TO 21
570 PRINT AT F,0; ""
575 NEXT F
585 IF DESCISION=1 THEN PRINT A
T 5,5;"YOU HIT A FORCE FIELD"
595 IF DESCISION=2 THEN PRINT A
T 5,5;"YOU RAN OUT OF FUEL"
605 PRINT AT 10,8;"YOUR SCORE W
AS:"; SCORE
610 IF SCORE>HISCORE THEN GOTO
800
615 PRINT AT 15,10;"HIGH-SCORE:
:HISCORE"
620 PRINT AT 17,10;"BY: ";R$
625 PRINT AT 20,10;"PRESS A KEY"
630 PRINT AT 20,10; ""
635 IF INKEY$="" THEN GOTO 677
640 GOTO 5
645 PRINT AT 15,2;"WELL DONE, A
NEW HIGH SCORE!"
650 LET HISCORE=SCORE
655 PRINT AT 17,4;"PLEASE INPUT
YOUR NAME"
660 INPUT A$
665 PRINT AT 20,10;"PRESS A KEY"
670 PRINT AT 20,10; ""
675 IF INKEY$="" THEN GOTO 831
680 GOTO 5
690 LET DESCISION=1
700 GOTO 500
705 LET DESCISION=2
710 GOTO 500
9998 SAVE "STAR"
9999 RUN

```

ROMAN SQUASH

YOU CONTROL the Roman who is standing in the pit and you must help him in his fight for life by moving him so that the arrows hit his shield and rebound. If the arrow passes him and hits the bottom of the pit, he will be fed to the lions. Use keys Q and P to move left and right and see how many time units you can survive.

Roman Squash was written for the 16K Spectrum by Barry Sims of Leek, Staffs.



```

1 FOR x=0 TO 7: READ a; POKE
USR "a"; a: NEXT x: DATA 31,3,
5,9,17,224,96,160
2 FOR x=0 TO 7: READ a; POKE
USR "b"; a: NEXT x: DATA 248,1
92,160,144,136,7,6,5
3 FOR x=0 TO 7: READ a; POKE
USR "c"; a: NEXT x: DATA 160,9
6,224,17,9,5,3,31
4 FOR x=0 TO 7: READ a; POKE
USR "d"; a: NEXT x: DATA 5,6,7
,136,144,160,192,248
5 FOR x=0 TO 7: READ a; POKE
USR "e"; a: NEXT x: DATA 255,6
6,102,102,99,60,60,24
10 BORDER 3: PAPER 3: INK 7: C
LS
20 PRINT AT 0,0; PAPER 0;""

```

```

25 PRINT AT 21,1; PAPER 5;""
30 FOR x=0 TO 21: PRINT AT x,
0; PAPER 0;" "; AT x,31;" "
35 NEXT x
40 LET a$="A": LET x=1: LET y=
INT ((RND *29)+1: LET c=18: LET
d=15
50 LET a1=1: LET ball1=4: LET t=
0
52 IF y >= 15 THEN LET b=-1
55 IF y <= 14 THEN LET b=1
56 LET ball=b+1
58 PRINT AT 0,27; PAPER 0;"";
"; AT 0,2; PAPER 0; INK 7;"Time
=";t; AT 0,23;"Men="; FOR w=1 T
0 ball1: PRINT PAPER 0;"E"; NEX
T w

```

```

60 LET x=x+a: LET y=y+b
61 IF t=999 THEN GO TO 600
62 LET t=t+1: PRINT AT 0,7; P
APER 0; INK 7;t
65 LET d=d+( INKEY$="p" AND d
+1<30)-( INKEY$="q" AND d>0)
70 PRINT AT 0,y; OVER 1; PAPE
R 3; INK 0;a$"
75 PRINT AT c+1,d;" E"
80 IF d=0 OR d+2>31 THEN PRIN
T AT c+1,0; INK 0;"(igB)"; AT c
+1,31; INK 0;"(igB)""
92 IF a=1 AND b=1 THEN PRINT
AT x-1,y-1; PAPER 3;""
94 IF a=-1 AND b=1 THEN PRINT
AT x+1,y-1; PAPER 3;""
96 IF a=1 AND b=-1 THEN PRINT
AT x-1,y+1; PAPER 3;""
98 IF a=-1 AND b=-1 THEN PRIN
T AT x+1,y+1; PAPER 3;""
105 IF ball=0 THEN GO TO 500

```

```

110 IF x=1 THEN LET a=1
120 IF y=1 THEN LET b=1
125 IF y=d+1 AND x=c AND a=-1 T
HEN LET a=1: BEEP .01,20
127 IF y=d+1 AND x=c AND a=1 TH
EN LET a=1: BEEP .01,20
130 IF y=30 THEN LET b=-1
131 IF a=1 AND b=1 THEN LET a=
"C"
132 IF a=-1 AND b=1 THEN LET a
="#"
133 IF a=1 AND b=-1 THEN LET a
="#"
134 IF a=-1 AND b=-1 THEN LET
a="#B"
135 IF (y=30 OR y=1 OR x=20 OR
x=1) THEN BEEP .01,15
136 IF x=20 THEN GO SUB 200: L
ET a=-1: IF ball1>0 THEN GO TO 5
6
140 GO TO 60
200 LET a=-1: BEEP 1,-20: BEEP
2,-30: RETURN
500 CLS
510 PRINT AT 3,3;"Your three m
en lasted for ";t
520 PRINT " time units."
530 PRINT " Too bad the
lions are going to enjoy a
nice dinner!!!"
540 FOR w=0 TO 10: FOR r=0 TO 7
:BORDER r: BEEP .01,r; r: NEXT r:
NEXT w
550 BORDER 3
560 INPUT "Another game ? (y/n
";d$

```

```

570 IF d$="Y" THEN RUN
580 STOP
600 CLS : FOR w=0 TO 50: BEEP .
01,w: NEXT w
610 CLEAR
620 LET y=20: LET y=1: LET a=20
: LET b=30
630 LET x=y-1: LET y=y+1: LET a
=a-1: LET b=b-1
635 IF x=5 THEN GO TO 670
640 BEEP .01,x: BEEP .01,a
650 PRINT AT x,y;"A"; AT a,b;"B"
655 PRINT AT x+1,y-1;" "; AT a
+1,b+1;" "
660 GO TO 630
670 FOR c=0 TO 30: PRINT AT x-
1,y-2; INK INT ((RND *7);"(ig2:
2*igB:ig1)""
675 BEEP .001, INT ( RND *20)+4
0
680 PRINT AT x,y-2; INK INT (
RND *7);"(ig2:igB:ig4)""
690 PRINT AT x+1,y-2; INK INT
((RND *7);"(g712*igB:ig4)""
700 NEXT c
710 CLS
720 PRINT AT 3,0;" You finis
hed the time limit you are no
w a general in the army!!!"
730 INPUT "Another game ? (y/n
";d$
740 IF d$="Y" THEN RUN
750 STOP

```

ALONG THE WIRE

ALONG THE WIRE is a version of the fairground game, the idea being to guide a hoop along a randomly-generated wire. You have to keep the right-hand side of the hoop on the wire or the game ends. Written for the 16K Spectrum by Andrew Holder of Weymouth, Dorset.

```

1 BORDER 2: PAPER 4: CLS
2 GO SUB 500
4 CLEAR
5 LET w=14
6 LET i=1
8 LET t=90
9 LET sc=0
10CLS
11 DIM z(250)
12 PRINT AT 0,0;" (iL:iE:iV:
1E:L)";1
15 PLOT 29,90
20 FOR a=30 TO 220 STEP 10
25 LET b=a/a
26 LET k=a
27 GO SUB 300
40 FOR q=a TO a+9
41 IF t<50 OR t>130 THEN GO S
UB 80
42 LET t=t+
45 LET z(q)=t
50 DRAW i,s
60 NEXT q
70 NEXT a
75 GO TO 100
80 LET a=k: GO SUB 300
85 RETURN
100 LET c=95
110 FOR g=30 TO 230 STEP 2
115 LET d=c
120 OVER 1: PLOT g,c: DRAW -w,0
: DRAW 0,-w: DRAW w,0: DRAW 0,w-
1
130 IF c-z(g)=1 THEN GO TO 210
133 IF c-z(g)=0 THEN GO TO 210
135 IF c-z(g)=w THEN GO TO 210
140 IF C-Z(G)=W+1 THEN GO TO 2
10
150 IF INKEY$ = "6" THEN LET c
=c-2
160 IF INKEY$ = "7" THEN LET c
=c+2
180 IF INKEY$ = "" THEN GO TO
149
190 OVER 1: PLOT g,d: DRAW -w,0
: DRAW 0,-w: DRAW w,0: DRAW 0,w-
1
200 NEXT g
205 GO TO 230
210 REEP 1,6: BEEP 1,2
215 PRINT AT 2,10;"(iT:iO:iU:
G:iSp:iL:iU:iC:iK)"
220 PRINT " YOU REACHED L
EVEL "I"
225 GO TO 280
230 FOR N=30 TO 50 STEP 3: BEEP
-.05,N: NEXT N
232 IF I=5 THEN GO TO 270
235 PRINT AT 2,10;"(iW:iE:iL:i
L:iSp:iD:iN:iE)"
240 PRINT AT 3,5;"NOW THINGS G
ET HARDER": FOR F=1 TO 100: NEXT
F
250 LET w=w-2: LET i=i+
260 GO TO 8

```

```

270 CLS : PRINT AT 10,10;"(iY:
10:iU:iV:iE:iSp:iD:iO:iN:iE:i
iL:iI:iT)"
275 FOR N=1 TO 15: BEEP .15, IN
T ( RND *20): NEXT N
280 INPUT "ANOTHER GAME (Y/N) :
";v$: IF V$="Y" OR V$="y" THEN
GO TO 2
290 STOP
300 LET I= INT ( RND *3)+1
310 IF I=1 THEN LET s=1
320 IF I=2 THEN LET s=0
330 IF I=3 THEN LET s=-1
335 IF A<32 THEN LET S=0
340 RETURN
500 PRINT AT 1,9;"(iA:iL:iO:iN:i
G:iSp:iT:iH:iE:iSp:iW:iR:iE)"
510 PRINT ,," The object of

```

the game is
re hoop along
ure that you
hand side of
the wire."

520 PRINT ,,"

leto the 1st
onto the

the hoop gets

530 PRINT ,,"

if the right

e hoop strays

you complete

(unlikely)."

540 PRINT ,,"

6-Down 7-Up

8-Forward",,"

"Press any key"

550 IF INKEY\$ = "" THEN GO TO

550

560 RETURN

to guide a squa
ire hoop along
ure that you
hand side of
the square over

Once you comp
lete the 1st
screen you move
next level and
smaller.."

The game ends
hand side of th
off the wire,or
all 5 screens.-

6-Down 7-Up

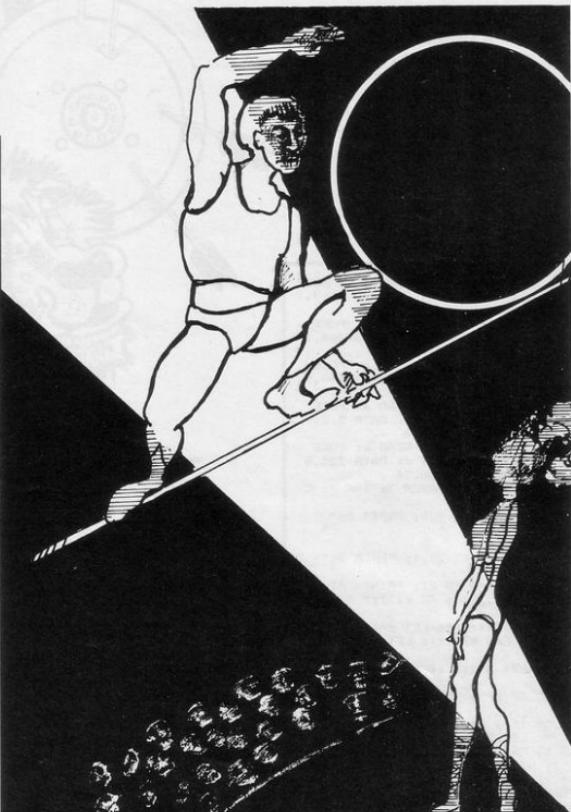
8-Forward",,"

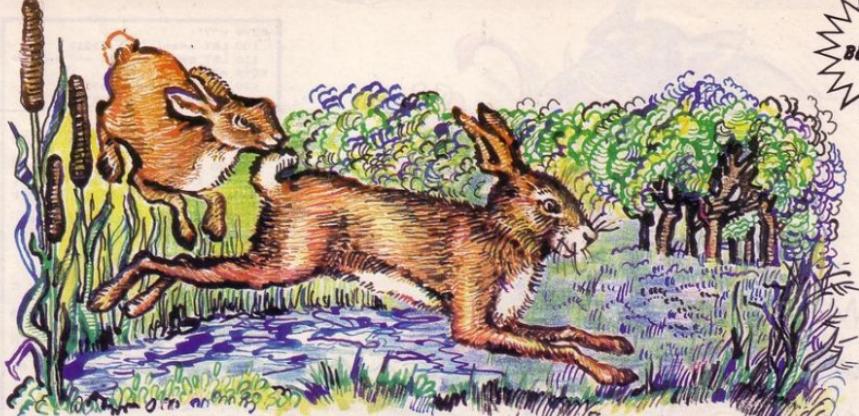
"Press any key"

550 IF INKEY\$ = "" THEN GO TO

550

560 RETURN





HUNT SABOTEUR

CHASE the hares from the field into the woods to save them from coursing the next day. Your task is made more difficult by a policeman who runs after you. Use the cursor keys to move.

Hunt Saboteur was written for the 16K Spectrum by Nathan Roche of Birkenhead, Merseyside.

The theme is that you play the part of someone who wishes to disrupt the hunt the next day. To do so, you have to chase as many hares into the forest as you can but the police know your intention, so while you are trying to save the hares you have to watch your step as well.

You chase the hare ' .' into the forest using the cursor keys, after which another hare will be dumped on the screen in a random position. Note that the policeman can travel in a diagonal fashion but you cannot.

Here is how the program works. Lines 10-15 print the instructions. Notice the PAUSE 0, which makes the program stop until a key is pressed. Lines 20-80 set up the initial variables and display the grass and forest. The double loop in line 60 prints the '*' which makes up the forest.

Lines 100-130 check to see which key is being pressed and print the man. Notice the neat way the keys are checked in lines 110 and 120.

The logic behind the hare running away from you is in lines 150-180. If you are more than three lines or columns away from the hare, nothing will happen but if you are, checks are made and the hare runs.

Lines 250-280 are a similar thing,

except that they control the policeman, with the main difference that he sometimes does not move.

Lines 300-360 are the checks to see if you have chased a hare into the forest and whether you have been caught. Finally, the GOTO in line 360 loops back to 100, where all the checks are done again.

Variables used

- a Row number for saboteur.
- b Column number for saboteur.
- c Row number for policeman.

```
10 PRINT "You (.) must chase t
he hares (.) into the woods (top
-right) to save them from hare
coursing the next day. The cops
(.) are trying to catch you"
```

```
15 LET d=10,0;"CONTROLS: c
ursor keys"; AT 12,0;"PRESS any
key to start"; PAUSE 0; CLS
```

```
20 LET a=21; LET b=16; LET c=0
: LET d=0; LET sc=0
25 PAPER 7; INK 4
30 FOR g=0 TO 255 STEP 3: PLOT
g,g: DRAW 0,175; NEXT g
60 FOR j=0 TO 75: FOR k=22 TO 3
1: PRINT AT j,k; INK 4;"*"; NEX
T k: NEXT j
80 LET e= INT ( RND *22 ): LET
f= INT ( RND *30 )
100 PRINT AT a,b; OVER 1;"_"
110 LET a=a+( INKEY# = "6")-( IN
KEY# = "?")
```

```
115 IF a>21 THEN LET a=21
120 LET b=b+( INKEY# = "8")-( IN
KEY# = "5")
125 IF b>31 THEN LET b=31
130 PRINT AT a,b; INK 2; OVER
1;"_"
150 PRINT AT e,f; OVER 1;"."
160 IF ABS (a-e)>3 THEN GO TO
165
161 IF a>e THEN LET e=e-1
```

d Column number for policeman.

e Row number for hare.

f Column number for hare.

g Used as FOR/PLOT index when drawing
grass.

j Used to hold row number when drawing forest.

k Used to hold column number when drawing
forest.

sc Holds score.

Subroutines

10-15 Print instructions.

20-80 Initialisation.

100-130 Print saboteur.

150-180 Print hare and calculate.

250-280 Print cop and calculate.

300-360 Caught /won checks.

```
162 IF a<e THEN LET e=e+1
165 IF e>20 THEN LET e=20
166 IF e<1 THEN LET e=1
170 IF ABS (b-f)>3 THEN GO TO
175
171 IF b>f THEN LET f=f-1
172 IF b<f THEN LET f=f+1
175 IF f>30 THEN LET f=30
176 IF f<1 THEN LET f=1
180 PRINT AT e,f; INK 3; OVER
1;"_"
250 PRINT AT c,d; OVER 1;"@"
255 IF RND >.5 THEN GO TO 277
260 IF a>c THEN LET c=c+1
265 IF a<c THEN LET c=c-1
270 IF b>d THEN LET d=d+1
275 IF b<d THEN LET d=d-1
280 PRINT AT c,d; OVER 1; INK
1;"@"
300 IF a=c AND b=d THEN GO TO
2000
350 IF e<b AND f>21 THEN GO TO
500
360 GO TO 100
500 BEEP .1,.10: BEEP .15,.12: LE
T sc=sc+1: GO TO 80
2000 INK 0: PRINT AT 10,9; FLAS
H 1;"YOU'RE NICKED!": BEEP .1,5:
BEEP .3,-5:
2010 PRINT AT 12,0;"But before
your arrest you saved";sc;" hare
s from a horrible death": STOP
```



SAFARI

GUIDE your cage around Africa collecting wild animals. At the beginning of the game you can enter the number of animals you wish to round up. Once you have caged all the animals you are told how long you needed to do so.

Safari was written for the 16K Spectrum by Gary Blake of Woodhouse, Notts.

```

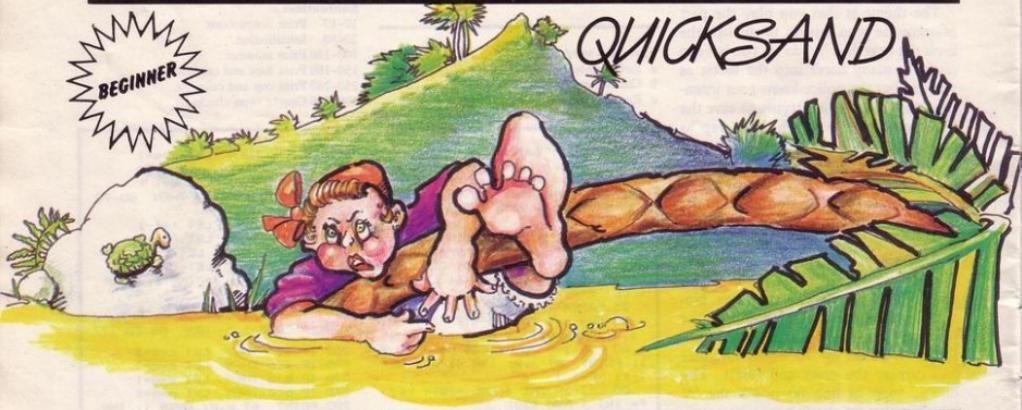
1 GO SUB 200
2 LET T=0: LET A=0: LET B=0
4 INPUT "HOW MANY ANIMALS ? "
;N
5CLS
6 IF N>100 THEN GO TO 4
19 FOR Y=1 TO N
40 PRINT AT ( RND *20 ),( RND
*31 );"C"
50 BEEP .009,-10
70 NEXT Y
85 LET T=T+1
90 LET A=a+( INKEY$="#6")-( IN

```

```

KEY#="7">
100 LET a=a+(a<0)-(a>21)
110 LET b=b+( INKEY$="B")-( IN
KEY$="S")
120 LET b=b+(b<0)-(b>30)
130 PRINT AT a,b;"AB"
132 BEEP,.03,1
135 PRINT AT a,b;" "
140 IF INKEY$="1" THEN GO TO
161
150 GO TO 80
161 IF t<70 THEN PRINT AT 10,
61 FLASH 1;"WELL DONE ! TIME=";
T
162 IF t >= 70 THEN PRINT AT
10,6; FLASH 1;"OH DEAR ! TIME=";
T
165 FOR p=1 TO 500: NEXT P
170CLS : GO TO 1
200 PAPER 4: BORDER 4: INK 2: C
LS
210 PRINT AT 0,13; FLASH 1;"SA
FARI"
220 PRINT AT 5,2;"GUIDE THE CA
GE ROUND AFRICA TRAPING WILD A
NIMALS.FIRST ENTER THE NUMBER OF
ANIMALS WANTED."
230 PRINT AT 10,4;"5=LEFT"; AT
11,4;"6=DOWN"; AT 12,4;"7=UP";
AT 13,4;"8=DOWN"; AT 14,4;"1=TO
FINISH GAME (WHEN ALL ANI
MALS ARE COLLECTED)"
250 RESTORE FOR n=0 TO 7: READ R: POKE
USR "#E+N,R: NEXT N
260 DATA UKR 11111111, BIN 101
01010, BIN 10101010, BIN 1010101
0, BIN 10101010, BIN 10101010, B
IN 10101010, BIN 11111111
270 FOR N=0 TO 7: READ R: POKE
USR "#C+N,R: NEXT N
280 DATA BIN 111111110, BIN 101
01010, BIN 10101010, BIN 1010101
0, BIN 10101010, BIN 10101010, B
IN 10101010, BIN 111111110
290 FOR N=0 TO 7: READ R: POKE
USR "#C+N,R: NEXT N
300 DATA BIN 100100000, BIN 011
00000, BIN 10010010, BIN 0101111
1, BIN 01111111, BIN 10101111, B
IN 10100001, BIN 0110010
310 RETURN

```



WALK AROUND the island avoiding the quicksand which appears suddenly. Treading on a patch of quicksand will result in instant death. One hundred points are gained for every step you take.

Quicksand was written for the 16K ZX-81 by Richard Papworth of Limekilns, Fife.

```

100 REM "QUICKSAND"
101 CLS
102 REM "        DUSTY SANIC"
103 RAND
104 LET S=0
105 LET T=30
106 PRINT "T=30"
107 FOR X=0 TO 10
108 PRINT TAB(12);";X";
109 LET X=X+1
110 LET LINT=(RND*11)+1
111 PRINT TAB(12);LINT
112 PRINT TAB(12);(RND*11)+3
113 PRINT TAB(12);PEEK(RND*11)
100 IF PEEK(16396)=255+PEK
101 16393 OR 112 THEN GOTO 190
102 16393 AND 255=0 THEN GOTO 190
103 16393 AND 255=255 THEN GOTO 190
104 D<5>_L+(RND-.5);":":_RND PEK

```

```

EEK 16398 25564+PEEK 16399) >21
120 LET S$="100"
130 LET RS$="ZINKIES"
140 IF RS$="S" OR RS$="8" THEN GO TO 130
150 PRINT AT R,L,""
160 LET RS$=(RS$+"-")+(RS$+"5")
165 LET GO$="GOTO 160"
180 GOTO 90
200 PRINT "YOU SCORED ";S;"POIN
T$"
210 PRINT "ANOTHER GAME ? N"
220 INPUT BS
230 IF BS="Y" THEN GOTO 2
240 IF BS="N" THEN STOP
250 STOP

```

LADDER ATTACK

PREVENT the ladders coming down and picking up your humanoids by hitting them with your bullets. If the ladder hits a humanoid it will take it to the top of the screen. Be careful not to run into the ladder, as doing so will take one of your three lives.

Ladder Attack was written for the 16K Spectrum by Andrew Bradford of Birstall, Leicester.



SHOOT the targets in the gallery as they move across the screen. If the targets reach the other side three times, the game will end.

Shooting Gallery was written for the 16K ZX-81 by Deepak Damania of London, E10.

```

1 LET S=0
2 LET L=3
3 LET D=0
4 LET J=19
5 LET B=7
6 LET P=3
7 PRINT AT 0,10;"SCORE ":"S"
8 PRINT AT 0,0;"LIVES ":"L"
9 PRINT AT 0,1;"A";
10 PRINT AT 0,D;"C";
11 IF INKEY$="5" THEN LET C=C-
12 IF INKEY$="8" THEN LET C=C+
13 IF INKEY$="9" THEN GOTO 150
14 IF A=22 THEN LET L=L+1
15 IF A=29 THEN GOTO 3335
16 IF B=19 THEN GOTO 3370
17 IF B=22 THEN GOTO 3390
18 GOTO 60
19 FOR F=19 TO 7 STEP -1
20 PRINT RT F,C20;" ";
21 PRINT RT F,C20;" ";
22 NEXT F
23 IF C>A-1 THEN GOTO 9
24 IF A=22 THEN GOTO 3335
25 PRINT AT 0,10;"SCORE ":"S"
26 PRINT AT 0,B;"C";
27 PRINT AT 0,A;"A";
28 GOTO 3340
29 PRINT AT B,A;" ";
30 LET A=0
31 PRINT AT B,A;" ";
32 PRINT AT B,A;" ";
33 GOTO 10
34 IF B>17 THEN PRINT AT B,A;" "
35 GOTO 4
36 PRINT AT 13,12;"GAME OVER"
37 PRINT RT B,A;" "

```

```

4 GO SUB 8000: GO SUB 9000
5 INK 4: PAPER 0: BORDER 0: C
LS
10 LET a=19: LET b=15: LET b1=
b+1
12 LET m1=0: LET m=0
14 LET sc=0
16 LET I=3
18 LET p=0
46 PRINT AT 0,26;i
48 FOR f=1 TO 30 STEP 3: PRINT
AT 21,f; INK 5;"D": NEXT f
52 PRINT AT 0,2;"000000"
54 PRINT AT 0,B- LEN STR$ sc;
;sc
56 PRINT AT 1,0; INK 7;"BBBBB
BBBBBBBBBBBBBBBBBBBBBBBBBBBBB"
90 LET e=2: LET el= INT ( RND
*29)+1
100 IF INKEY$ = "0" THEN LET m
=1: LET b1=b+1: FOR m=18 TO 2 S
TEP -1: PRINT AT m,b1; INK 5;"R
105 PRINT AT a,b1;"A"
110 IF INKEY$ = "1" AND b>2 THE
N LET b=b-1
120 IF INKEY$ = "2" AND b<30 TH
EN LET b=b+1
130 PRINT AT e,el; INK 7;"B";
BEEP .01,e
140 LET sme=1
175 IF m=1 AND el=b1 AND m<e T
HEN FOR f=5 TO 1 STEP -1: BEEP
.01,f: NEXT f: PRINT AT e-1,el;
INK 6;"C": FOR f=5 TO 1 STEP -1
: BEEP .01,f: NEXT f: FOR d=m TO
1 STEP -1: PRINT AT d,el;" ";
At m,b1;" ": LET m1=0: NEXT d: L
ET sc=sc+10: GO TO 52
180 IF e=19 AND el=b1 THEN FO
R f=1 TO 7: PRINT AT a,b1; INK
f;"C": BEEP .01,50: BEEP .01,51
: BEEP .01,49: NEXT f: LET el=1-i
: PRINT AT a,b1;" "; GO TO 281
190 IF 1=0 THEN GO TO 350
200 IF p=10 THEN GO TO 350
250 PRINT AT 0,B- LEN STR$ sc
;sc

```

```

255 PRINT AT 0,26;i
280 IF e >= 20 AND ATTR (e+1,e
)=5 THEN GO SUB 300
281 IF e >= 20 THEN FOR r=21 T
O 0 STEP -1: PRINT AT r,e;" ";
NEXT r: GO TO 52
290 IF m1=1 AND m>1 THEN PRINT
AT m,b1;" "; NEXT m
295 IF m1=1 AND b1=e1 AND m=e
THEN BEEP .5,0
299 GO TO 100
300 FOR r=21 TO 1 STEP -1: PRIN
T AT r,e; INK 5;"D": BEEP .01,
r: PRINT AT r,e;" "; NEXT r
310 PRINT AT m,b1;" "; LET m=
0
315 LET ppp=1
320 GO TO 52
350 PRINT AT 10,10; INK 5;"GA
ME OVER"
360 FOR k=50 TO 0 STEP -2: BEEP
.01,k: NEXT k
370 IF INKEY$ = "" THEN GO TO
370
380 CLS : GO TO 10
8000 PRINT "LADDER ATTAC
K"
8010 PRINT "The object of thi
s game" "is to prevent the alien
s ""from taking human prisoners
""by destroying their ladders"
8020 PRINT "CONTROLS" "1-1
eft" "2-right" "0-fire"
8030 PAUSE 0: RETURN
9000 FOR n=144 TO 147: FOR x=0 T
O 7: READ a: POKE USR CHR$(n+x
):a: NEXT x
9100 DATA 16,16,56,56,186,254,14
6,0
9110 DATA 16,124,16,16,16,16,16,
16
9120 DATA 16,32,19,196,32,10,41,
201
9130 DATA 16,56,84,124,16,56,40,
108
9150 CLS : RETURN

```

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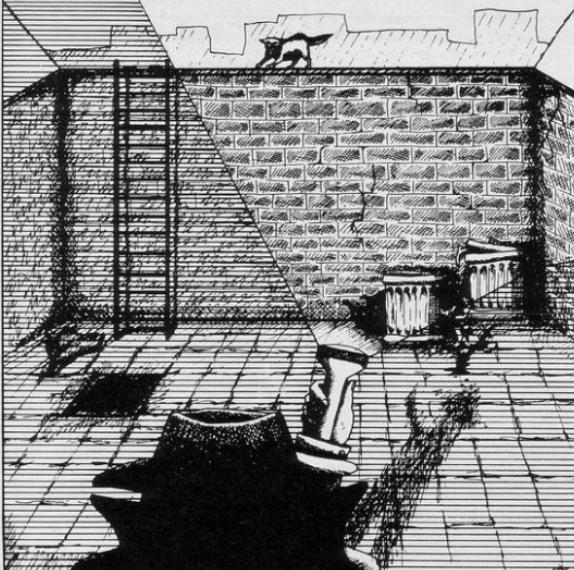


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50 different screens of mayhem. "A fun game for all ages . . . which I thoroughly enjoyed" — Home Computing Weekly.

DETECTIVE

A MURDER has been committed in your town and it is your job to find the killer and put him or her behind bars, thus ensuring the safety of other residents. You are given the name of the victim, the time and place of the murder, and also the murder weapon. There are 19 suspects and you can choose to name the murderer in three to 40 questions.

Detective was written for the 48K Spectrum by David Pankhurst of Strood, Kent.



```

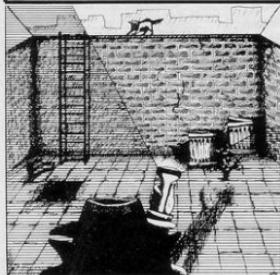
1 POKE 23609,50
2 INPUT "SKILL LEVEL i.e no.
of questions you can ask ?(3-40)
";sk
3 IF sk<3 OR sk>40 THEN GO TO
0 2
4 INPUT "Town of residence?";
z$*
5 RESTORE
6 RANDOMIZE
7 DIM a$(21,19)
10 INPUT "ENTER YOUR NAME";a$(21)
12 PRINT AT 10,0; INK 2; INV
ERSE 1;"Please wait while a murd
er in ";z$;" is occurring"
15 FOR n=1 TO 20
20 READ a$(n)
25 NEXT n
30 DIM s$(20); DIM t$(20); DIM w
(20); DIM p$(20)
35 DIM c$(20); DIM c#(20,10)
40 DIM s#$(20,10); DIM t#$(20,12)
): DIM p#$(20,15)
50 LET goes=0
100 FOR n=1 TO 20
110 LET s(n)= INT ( RND *2+1
T t(n)= INT ( RND *2+1; LET w(n)=
INT ( RND *3+1; LET p(n)= INT (
RND *3)
115 LET c(n)= INT ( RND *3)
120 NEXT n
140 LET vic= INT ( RND *20)+1
200 LET mur= INT ( RND *20)+1
210 IF mur=vic THEN GO TO 200
220 FOR n=1 TO 20
230 IF n=mur THEN GO TO 250
240 IF s(n)=mur) AND t(n)=t(m
ur) AND c(n)=c(mur) AND w(n)=w(
mur) AND p(n)=p(mur) THEN LET s(
n)= INT ( RND *2); GO TO 240
250 NEXT n
300 LET n=mur
310 GO SUB 9500
315 CLS : PRINT "victim: "; INK
2;a$(vic); PRINT "part of town:
"; INK 2;z$(mur);t$(mur)
317 PRINT "murder weapon: "; INK
2;z$(mur)
320 PRINT "location: "; INK 2;p
$(mur)
325 LET hol= INT ( RND *3); LET
ho= INT ( RND *10); LET minl= I
NT ( RND *6); LET min= INT ( RND
*10)
327 IF hol=2 AND ho>4 THEN GO
TO 325
330 PRINT "time of death: "; IN
K 2;hol;ho;"":minl:min
350 FOR n=1 TO 20
360 GO SUB 9500
370 NEXT n
380 PRINT : PRINT : PRINT : PRI
NT ; INK 2; FLASH 1;"Press any k
ey"
390 PAUSE 0
400 FOR n=1 TO 21
405 POKE 23692,10
410 PRINT : PRINT
420 BEEP .01,n
430 NEXT n
500 CLS : PRINT AT 10,0;"Quest
ions asked: "; INK 2;goes: PRINT
AT 12,0;"Limit on questions: ";
INK 2;sk
501 INPUT "Do you wish to accu
se someone? (y/n):f#
502 IF f#="y" OR f#="Y" THEN G
O TO 4000
503 IF f#="n" OR f#="N" THEN G
O TO 505
504 GO TO 501
505 INPUT "who do you want to q
uestion?":q#
506 IF q#>20 OR q<1 THEN GO TO
505
507 IF q=vic THEN PRINT "THE
VICTIM": GO TO 505
1050 CLS : PRINT AT 1,3;"THE FI
LE OF "; INK 1;a$(q)
1052 GO SUB 7000
1055 PRINT "personal questions:-
"
1058 IF q>10 THEN PRINT "1)SIDE
SHE WAS ON          2)UP 0
R DOWN TOWN        3)WEAP
ON CARRIED         4)":q#
: GO TO 1062
1060 PRINT "1)SIDE HE WAS ON
2)UP OR DOWN TOWN
3)WEAPON CARRIED
4)":q#
1063 PRINT "5)COLOUR OF HAIR": P
RINT : PRINT : PRINT
1064 INPUT "option?":op
1065 IF op>5 OR op<1 THEN GO TO
1064
1066 GO TO 1066+op
1067 PRINT "I was on the ";z$(q)
: GO TO 1075
1068 PRINT "I was ";t$(q): GO TO
1075
1069 PRINT "I carry ";w$(q): GO
TO 1075
1070 GO TO 2000+2*( INT ( q(6)))
1071 PRINT "my hair is ";c$(q)
1075 LET goes=goes+
1080 IF goes>sk THEN GO TO 3000
1085 PRINT AT 21,0; INK 1; INVE
RSE 1;"press a key to continue":
PAUSE 0
1090 GO TO 500
2000 INPUT "SUSPECT CONCERNED?":
su: IF su>20 OR su<1 THEN GO TO
2000
2001 PRINT ;p$(su): GO TO 1075
2002 PRINT "the killers hair is
";c$(mur)
2003 GO TO 1075
2004 IF mur>11 THEN PRINT "MALE
": GO TO 1075
2005 PRINT "FEMALE": GO TO 1075
2006 GO TO 2000
3000 CLS : PRINT INK 2;a$(mur);
INK 0;" DID IT "
3050 PRINT : PRINT "YOUR ENQUIRI
ES TOOK TOO LONG"
3055 PRINT : PRINT : IF mur>11 T
HEN PRINT "now she has left the
country a free person": GO TO.
3080
3065 PRINT "now he has left the
country a free person"
3080 PRINT : PRINT "you have bee
n demoted": PRINT : PRINT : PRIN
T "better luck next time "; INK
2;"P.C ";a$(21)

```

```

3090 PRINT AT 21,0; INK 1; INVE
RSE 1;"Press any key to try agai
n"
3100 PAUSE 0
3105 CLS
3110 GO TO 1
4000 CLS : PRINT "OKAY WHO IS IT
?"; PRINT : PRINT "(suspect's nu
mber)"
4010 INPUT gu
4020 PRINT ;"SO YOU THINK IT IS
"; INK 2;a$(gu)
4030 PRINT : PRINT : PRINT : FRI
NT
4040 PRINT "WELL "; INK 1;a$(mur
); INK 0;" DID IT"
4050 IF gu$=mur THEN GO TO 450
0
4060 PRINT "WHAT A DETECTIVE YOU
ARE CONVICTING THE WRONG
PERSON"
4065 PRINT AT 15,0;"You have be
en demoted . Your career
is ruined "; INK 2;"P.C ";a$(21
)
4068 PRINT AT 20,0; INK 1; INVE
RSE 1;"Press a key to redeem you
rself"

```



```

4070 PAUSE 0
4080 CLS
4090 GO TO 1
4500 PAUSE 0; CLS
4510 FOR n=1 TO 20
4520 LET i = INT ( RND *50 ); LET
sfg= INT ( RND *2 )
4530 IF sfg=1 THEN LET i=-i
4540 BEEP .2,i
4550 NEXT n
4600 PRINT AT 10,0;"CORRECT THE
TOWN OF "; INK 2;z$; INK 0;" CA
N FEEL SAFE AGAIN WITH THE KILL
ER "; INK 1;a$(mur); INK 0;" BEH
IND BARS"; PRINT "it took you ";
goes;" questions"
4601 PRINT AT 21,0;"Press a key
"; PAUSE 0
4602 PRINT AT 21,0;""
4605 CIRCLE 100,40,20
4606 CIRCLE 92,50,30; CIRCLE 108,
50,30; PLOT 89,30; DRAW 3,5; DRAW
16,0; DRAW 3,-5
4607 PRINT AT 14,9; OVER 1; INK
3;"(6*i+g4*ig5)": PAUSE 30; PRIN
T AT 15,9; INK 3; OVER 1;"(7*i
g5)": PAUSE 30; PRINT AT 16,9; I
NK 3; OVER 1;"(7*i5)": PAUSE 30
: PRINT AT 17,9; INK 3; OVER 1;
"(7*i5)": PAUSE 30; PRINT AT 1
8,9; INK 3; OVER 1;"(6*i1+ig5)"
4608 PRINT "Have a vacation "; I
NK 2; INVERSE 1;"CHIEF DETECTIVE
"; INK 0; INVERSE 0;a$(21); PRI
NT INK 1; INVERSE 1;"Press a ke
y to have another go"
4609 PAUSE 0
4610 FOR n=1 TO 100
4620 LET x= INT ( RND *31 );
LET y= INT ( RND *31 )
4630 LET ink= INT ( RND *7 ); LET
j= INT ( RND *30 ); LET sfg= INT
( RND *2 )
4635 IF sfg=1 THEN LET j=-j
4640 PRINT AT x,y; INK ink;"(ig
B)"
```

```

4650 BEEP .01,j
4660 NEXT n
4670 CLS
4680 GO TO 1
7000 GO SUB 7100+( INT (q/6))
7020 RETURN
7100 LET q$="WHEREABOUTS OF SUSP
ECTS": RETURN
7101 LET q$="COLOUR OF MURDERER"
S HAIR": RETURN
7102 LET q$="SEX OF MURDERER": R
ETURN
7103 LET q$="WHEREABOUTS OF SUSP
ECTS": RETURN
9000 DATA "BASHER BRIGGS", "TEA L
EAF TOM", "PSYCHO JONES", "FORGER
FRED", "SHOTGUN SID", "SLIPPERY SA
M", "MANIAC SMITH", "MICKEY MOBB",
"CRUSHER CUMMINS", "RAZOR RULER",
"STRANGLER SUE", "DEMENTED DOREEN
", "CUT THROAT CAROLE", "BETTY CHO
PFER JONES", "SADISTIC SUE", "LILY
LIONESS KIDD", "FELINE FREDA", "K
ILLER IVY", "POISON PENNY", "SPECT
RUN SUZIE"
9500 LET s$(n)="EAST SIDE"
9510 IF s$(n)=1 THEN LET s$(n)="
WEST SIDE"
9520 LET t$(n)="UP TOWN"
9530 IF t$(n)=1 THEN LET t$(n)="
DOWN TOWN"
9540 LET w$(n)="A REVOLVER"
9550 IF w$(n)=1 THEN LET w$(n)="
A KNIFE"
9560 IF w$(n)=2 THEN LET w$(n)="
AN AXE"
9570 LET p$(n)="THEATRE"
9580 IF p$(n)=1 THEN LET p$(n)="
DOCKS"
9590 IF p$(n)=2 THEN LET p$(n)="
FOOTBALL GROUND"
9600 LET c$(n)="BLONDE"
9610 IF c$(n)=1 THEN LET c$(n)="
BLACK"
9620 IF c$(n)=2 THEN LET c$(n)="
BROWN"
9630 RETURN

```

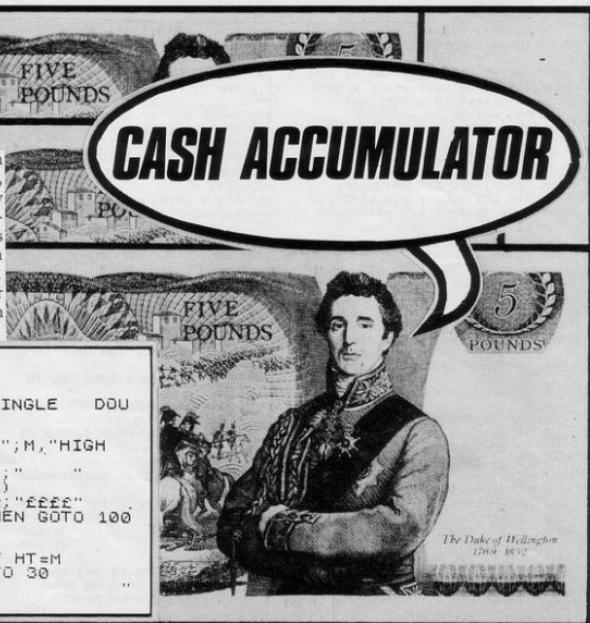
POUND signs flash on the screen below the headings lost, single, double and treble. You must try to accumulate as much money as possible by pressing "0" when the pounds are under double or treble. If you finish below lost you will lose all your money.

Cash Accumulator was written for the 1K ZX-81 by M Gibbs of Sneinton Dale, Notts.

```

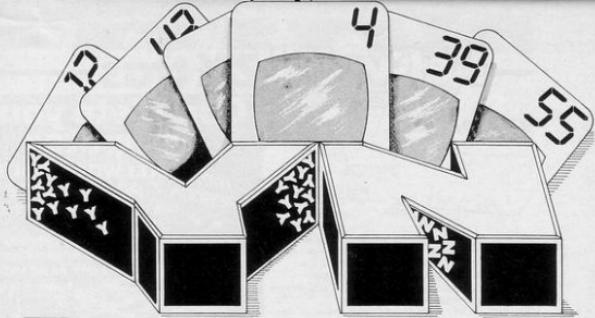
1 SAVE "D"
2 LET HT=0
3 LET R=0
4 PRINT "LOST SINGLE DOU
BLE TREBLE"
5 LET M=1
6 LET HT=M
7 PRINT AT 4,0;"£ ";M,"HIGH
"
8 PRINT AT 4,R;"£ ";M,"LOW
"
9 PRINT AT 1,R*8+2;" "
10 LET R=INT (RND*4)
11 PRINT AT 1,R*8+2;"££££"
12 IF INKEY$="0" THEN GOTO 100
130 GOTO 40
140 LET M=M*R
145 IF M>HT THEN LET HT=M
150 IF M>0 THEN GOTO 30
160 PRINT AT 4,0;" "
250 GOTO 20

```



THINK of a number between one and 63 and remember it. The computer will then show you six cards with different numbers on them. Each time a card is shown you must press 'Y' or 'N', depending on whether or not the number of which you thought is on that particular card. Once that has been done, the computer will work out the number of which you thought.

Think of a Number was written for the 16K Spectrum by John Betty, aged 15, of Leyland, Lancashire.



THINK OF A NUMBER

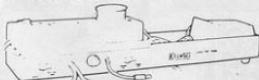
```
1 BORDER 1: PAPER 1: INK 7: C
LS 2 FOR p=1 TO 8: READ a: POKE
USR "A"+p,:a: NEXT p: FOR S=0 TO
7: READ 0t: POKE USR "S"+0t: N
EXT S: DATA 8,8,56,120,164,189,7
2,48: DATA 0,9,252,24,37,253,18
,12: GO SUB 2000
3 LET s=0
9 LET q=="IS YOUR NUMBER ON T
HIS CARD?": PRINT "(Y/N)?"
"
```

```
10 DIM a$(250): DIM b$(250): D
IM c$(250): DIM d$(250): DIM e$(250)
11 DIM f$(250)
20 READ a$: READ b$: READ c$:
READ d$: READ e$: READ f$:
30 CLS : PRINT TAB 10; INK 6;
INVERSE 1; "NUMBERS GAME":
40 PRINT AT 10,4; INK 7:a$: P
RINT AT 2,4; INK 7; INVERSE 1;
CARD 1: BORDER 3
45 PRINT AT 20,3; INK 7;"IS Y
OUR NUMBER ON THIS CARD ?"; AT 2
1,15;"(Y/N)"
46 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+2: PAUSE 10: BE
EP 1,55: GO TO 49
47 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10: BE
EP 1,30: GO TO 49
48 GO TO 46: GO TO 47
49 CLS : PRINT AT 10,4;b$: PR
INT AT 2,4; INK 7; INVERSE 1;"C
ARD 2": PRINT AT 20,3;q$: BORDER
R 2
50 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+4: PAUSE 10:
BEEP 1,55: GO TO 55
51 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 55
53 GO TO 50: GO TO 51
55 CLS : PRINT AT 10,4; INK 7
:c$: PRINT AT 2,4; INK 7; INVER
SE 1;"CARD 3": PRINT AT 20,3;q$:
BORDER 3
56 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+1: PAUSE 10:
BEEP 1,55: GO TO 60
57 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 60
58 GO TO 56: GO TO 57
60 CLS : PRINT AT 10,4; INK 7
:d$: PRINT AT 2,4; INK 7; INVER
SE 1;"CARD 4": PRINT AT 20,3; I
NK 7;q$: BORDER 4
61 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+16: PAUSE 10:
BEEP 1,55: GO TO 65
62 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 65
63 GO TO 61: GO TO 62
65 CLS : PRINT AT 10,3; INK 7
:e$: PRINT AT 2,4; INK 7; INVER
SE 1;"CARD 5": PRINT AT 20,4; I
```

```
NK 7;q$: BORDER 5
66 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+32: PAUSE 10:
BEEP 1,55: GO TO 70
68 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 70
69 GO TO 66: GO TO 68
70 CLS : PRINT AT 10,3; INK 7
:f$: PRINT AT 2,4; INK 7; INVER
SE 1;"CARD 6": PRINT AT 20,3; I
NK 7;q$: BORDER 6
73 IF INKEY$ == "y" OR INKEY$ ==
"y": THEN LET n=n+8: PAUSE 10:
BEEP 1,55: GO TO 80
74 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN LET n=n+0: PAUSE 10:
BEEP 1,30: GO TO 80
75 GO TO 73: GO TO 74
76 CLS : BORDER 1: PRINT AT 1
4,4; INK 7;"I BET YOUR NUMBER IS
:FLASH 1:n"
81 INPUT "AM I CORRECT (Y/N) "
:y$:
82 FOR U=1 TO 25: IF Y=="y" OR
Y=="Y": THEN PRINT AT 18,3; FL
ASH 1; INK 7;"NAME IS THE NAME
:BEEP .1: RND *U: NEXT U
83 FOR T=25 TO 1 STEP -1: IF Y
=="y" OR Y=="N": THEN PRINT AT
18,1; INK 7;"WELL !"; INK 5; FL
ASH 1;"WE"; INK 7; FLASH 0;"ARE
NOT ALL PERFECT."; BEEP .1; T:N
EXT T
90 PAUSE 50: PRINT AT 20,5; I
NK 4; FLASH 1;"PRESS A KEY": PAU
SE 0: CLS
100 PRINT AT 6,6; INK 5;"PRESS
DESIRED KEY"
105 PRINT AT 10,4; INK 4; FLAS
H 1;"(R)": INK 5; FLASH 0;"RUN"
:AT 12,4; INK 4; FLASH 1;"(S)"
:INK 5; FLASH 0;"SAVET": AT 14,4
:INK 4; FLASH 1;"(E)": INK 5; F
LASH 0;"END"
106 IF INKEY$ == "R" OR INKEY$ ==
"r": THEN BEEP .1,55: CLS : RUN
:GO TO 106
109 IF INKEY$ == "s" OR INKEY$ ==
"s": THEN CLS : BEEP .1,55: PR
INT AT 19,2; INK 5;"YOU ARE SAV
I": FLASH 1;"NUMBER GAME": SAV
E "NUMBER LINE": GO TO 109
111 IF INKEY$ == "e" OR INKEY$ ==
"e": THEN BEEP .1,55: RANDOMIZE
USR 0: GO TO 111
112 GO TO 106: GO TO 109
1000 DATA "2 3 6 7 10 11 14 15
18 19 22 23 26 27 30
31 34 35 38 39 42 43 46
47 50 51 54 55 58 59 6
2 63"
1001 DATA "4 5 6 7 12 13 14 15
20 21 22 23 28 29 30
```

```
31 36 37 38 39 44 45 46
47 52 53 54 55 60 61 62
63" 1003 DATA "1 3 5 7 9 11 13 15
17 19 21 23 25 27 29
31 33 35 37 39 41 43 45
47 49 51 53 55 57 59 61
55 1004 DATA "16 17 18 19 20 21 22
23 24 25 26 27 28 29 30
31 48 49 50 51 52 53 54
55 56 57 58 59 60 61 62
63" 1005 DATA "32 33 34 35 36 37 38
39 40 41 42 43 44 45 46
47 48 49 50 51 52 53 54
55 56 57 58 59 60 61 62
63" 1006 DATA "8 9 10 11 12 13 14 15
31 24 25 26 27 28 29 30
40 41 42 43 44 45 46
47 40 41 42 43 44 45 46
55 56 57 58 59 60 61 62
63" 2001 FOR g=1 TO 6: PRINT AT 1,1
0; INK g;"NUMBER GAME": BEEP .1,
g: NEXT g: NEXT g
2005 PRINT AT 8,2; INK 7;"YOU M
UST THINK OF A NUMBER": AT 9,2;
"BETWEEN 1 AND 63.": AT 11,2;"WH
EN YOU HAVE THOUGHT OF A ": AT 1
2,2;"NUMBER, THEN CHECK THE 6 CA
RDS": AT 13,2;"IF YOUR NUMBER IS
ON THE CARD,": AT 14,2;"THEN PR
ESS 'Y':": AT 16,2;"IF YOUR NUM
BER IS NOT": AT 17,2;"THEN PRESS
": AT 18,2;"N".
2006 PAUSE 170: FOR R=17 TO 2 ST
EP 1: PRINT AT 20,R; INK 4; BR
IGHT 1; ASK "PRESS A KEY": BEE
P .1,R: NEXT R: PAUSE 0: CLS
2010 PRINT AT 4,4; INK 5; BRIGH
T 1;"THINK OF A NUMBER BETWEEN";
AT 6,8; INK 6;"1 AND 63".
2011 PAUSE 50: PRINT AT 9,10; I
NK 6; FLASH 1;"OK": PRINT AT 1
4,4; INK 5; FLASH 1;"Y/N": PRIN
T AT 11,2; INK 7;"HAVE YOU THO
UGHT OF A NUMBER": IF INKEY$ == "y"
OR INKEY$ == "y": THEN GO TO 20
2012 IF INKEY$ == "n" OR INKEY$ ==
"n": THEN CLS : GO TO 2000
2013 GO TO 2011: GO TO 2012
2020 CLS : RETURN
```

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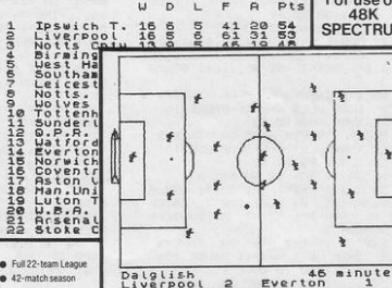
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SNOOKER

ONE OF the first things to do when playing **Snooker** is to make a note of the instructions. Although the game contains no graphics, it is very interesting and the players can choose the number of frames to play. If

the asterisk finishes beneath an "R" it means you have potted a ball and you then have a chance to play a colour.

Snooker was written for the 16K ZX-81 by M Gibbs of Sneinton Dale, Notts.

```

1 SAVE "SNOOKER"
10 LET X=7
20 LET B$="RED YELLOWGREEN B
30 LET F$="BLUE PINK BLACK FINISH"
30 DIM F(2)
35 GOSUB 6000
40 PRINT "INPUT NAMES (12 LET
TERS MAXIMUM)"
50 INPUT A$(1)
60 INPUT A$(2)
70 PRINT A$(1),A$(2)
80 PRINT ",,";"HOW MANY FRAMES
?
90 INPUT FR
100 LET C$="PYGEEPB"
110 LET FW=0
120 LET Q=0
140 DIM W(2)
200 CLS
210 LET AG=0
220 DIM S(2)
230 LET T=INT (RND*2)+1
240 LET RE=15
245 LET W(1)=1
250 IF RE>0 AND X<>1 THEN GOTO
270
250 LET W(1)=INT (RND*10)+1
270 LET B=0
290 LET V=1
355 IF RE=0 THEN GOTO 800
380 GOTO 1000
500 DIM Z(12)
510 FOR I=1 TO 12
520 LET Z(I)=INT (RND*14)+1
530 NEXT I
635 FOR I=1 TO 6
640 PRINT AT 7+I,24;" "
645 PRINT AT 7+I,15,I+1,"";B$(
(I-5)+1 TO (I+1)*5);TAB 24;Z(I);
TAB 28,Z(I+5)
650 NEXT I
660 INPUT X
670 LET W(2)=Z(X-1)
670 LET W(1)=Z(X+5)
677 LET V=2
680 GOTO 1100
690 IF RE=0 THEN LET X=1
700 LET X=X+1
700 LET RE=-1
700 IF X=8 THEN GOTO 4000
700 IF RE>0 THEN LET X=1
1100 FOR I=1 TO 15
1150 IF I=15 THEN PRINT AT 18,30
;"F"
1200 IF I>W(U) AND I<>15 THEN PR
INT AT 18,I,2;"O"
1250 IF I<=W(U) THEN PRINT AT 18
I,2;C$(X)
1270 NEXT I
1280 GOSUB 7000
1290 PRINT AT 19,0*2;" "
1400 LET Q=INT (RND*15)+1
1450 PRINT AT 19,0*2;"*"
1500 IF INKEY$="0" THEN GOTO 200
0
1510 IF INKEY$="F" THEN GOTO 400
0
1550 PRINT AT 19,0*2;" "
1560 GOTO 1400
2000 IF Q>W(U) THEN GOTO 2100
2010 PRINT AT 10,0;"POT ";B$(((X
-1)*5)+1 TO X*5)
2020 LET B=B+X
2030 PRINT "BREAK=";B
2040 IF X=1 THEN LET RE=RE-1
2050 IF X=1 THEN GOTO 600
2055 LET V=1
2060 IF RE=0 THEN GOTO 800
2070 GOTO 1000
2100 IF Q<>15 THEN GOTO 3000
2150 LET FW=X
2200 IF FW<4 THEN LET FW=4
2400 PRINT AT 15,0;"DOWN ";FW;" "
2500 FOR I=1 TO 50

```

```

36000 NEXT I
37000 PRINT AT 15,0;""
38000 LET S(T)=S(T)+B
39000 PRINT AT 10,0;""
40000 PRINT ""
41000 IF T=1 THEN GOTO 3420
42000 IF T=2 THEN LET T=1
43000 GOTO 3450
44000 LET T=2
45000 IF AG=1 THEN RETURN
46000 IF FW=0 THEN GOTO 250
47000 LET S(T)=S(T)+FW
48000 LET AG=1
49000 LET FW=0
50000 GOTO 250
51000 LET S(T)=S(T)+B
52000 IF S(1)>S(2) THEN LET F(1)=
53000 F(1)+1
54000 IF S(1)<S(2) THEN LET F(2)=
55000 F(2)+1
56000 GOSUB 7000
57000 FOR J=1 TO 50
58000 NEXT J
59000 IF F(1)=INT(FR/2)+1 OR F(2)=
60000 INT(FR/2)+1 THEN GOTO 5000
61000 IF S(1)>S(2) THEN GOTO 200
62000 LET X=5
63000 LET W(1)=INT(RND*4)+1
64000 GOTO 800
65000 CLS
66000 PRINT R$(1);";F(1),R$(2);
67000 ";F(2)
68000 STOP
69000 PRINT "**** SNOOKER : HOW TO
70000 PLAY ****"
71000 PRINT ""
72000 PRINT " TO STOP THE ""*"" P
73000 RESS "
74000 PRINT " TO END THE FRAME P
75000 RESS "
76000 PRINT
77000 PRINT "IF YOU FINISH UNDER
78000 THE ""O"" IT IS THEN YOUR OPPON
79000 ENTS TURN "
80000 PRINT

```

```

6070 PRINT "IF YOU FINISH UNDER
THE ""R"" YOU HAVE POTTED THE BA-
LL AND IT IS YOUR TURN TO GO FO-
R A COLOUR"
6080 PRINT "YOU MAY THEN SEE 2
YELLOW 11 6"
6090 PRINT
6100 PRINT " IF YOU GO FOR THE Y-
ELLOW YOU INPUT 2, YOU THEN HA-
VE 11 YELLOWS AND IF YOU POT THA-
T, 6 REDS"
6110 PRINT
6120 PRINT " IF YOU FINISH UNDER
THE ""F"" YOU HAVE FOULLED AND G-
IVE THE PENALTYAWAY. YOUR OPPONE-
NT MAY ASK YOU TO PLAY AGAIN BY
PRESSING ""A"" OR NOT BY PRESSIN-
G QUIT"
6200 IF INKEY$="" THEN GOTO 6200
6400 CLS
6500 RETURN
6900 STOP
7000 PRINT AT 5,0;":"
7050 PRINT AT 0,30;":"
7100 IF RE>0 THEN PRINT AT 0,9;F-
(1);," FRAMES ";F(2);TAB 25;B$(C-
1);,RE
7200 IF RE<=0 THEN PRINT AT 0,9;F-
(1);," FRAMES ";F(2);TAB 25;B$(C-
(X-1)*6)+1 TO X*6)
7300 PRINT TAB 3;A$(1),A$(2)
7400 PRINT TAB 8;S(1);TAB 18;S(2)
7500 PRINT AT 5,0;A$(T);," TO PLA-
Y"
7600 IF AG=1 THEN GOTO 8000
7700 RETURN
8000 PRINT AT 5,20;:"PLAY AGAIN? "
8100 IF INKEY$="A" THEN GOTO 850
8200 IF INKEY$=""0" THEN GOTO 900
8300 GOTO 8100
8400 GOSUB 3300
9000 LET AG=0
9100 GOTO 7000

```



TEST PILOT

YOU ARE on a test flight in a new fighter aircraft when the controls malfunction. The aircraft flies into a valley and you must guide it through the narrow passages, avoiding the walls.

After loading the program RUN 100 and enter the following data: 33, 123, 64, 62, 231, 219, 254, 203, 103, 202, 149, 64, 203, 87, 194, 150, 64, 52, 52, 53, 42, 14, 64, 6, 0, 78, 201. Lines 100-103 can then be deleted.

Test Pilot was written for the 16K ZX-81 by Michael Hicken, of Cardigan, Dyfed.

```

1 REM AAAAAAAAAAAAAAAAAAAAAAAA
2 AARRA(%+-+--%) ? ($E$; ?) (%+-+--%)
3 /,0123210, /%+-+--%< (%+-+--%); /%+-+--%
4 2 LET RS=0
5 FOR I=VAL "0" TO UAL "9"
6 4 LET R=LEN(RS);RS
7 NEXT I
8 POKE 16507,CODE "E"
9 FOR U=VAL "0" TO LEN_RS
10 4 FOR V=VAL "0" TO CODE INKE
11 3 LET RS=RS+U*16^V
12 PRINT AT 0,PEEK 16507;
13 IF USA 16514=128 THEN GOTO 20
14 PRINT "U";AT 9,PEEK (I+1654
15 :12;A) :16514
16 :NEXT I
17 :IF U=UAL "3" THEN LET RS=""
18 :IF U=LEN_RS THEN LET RS=""
19 :NEXT U
20 PRINT I+U*CODE "PI"
21 :POKE 16514 TO 16540
22 :PUA
23 :POKE 1,A
24 :NEXT I

```

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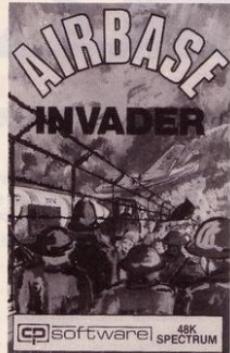
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World-beating computer thrown on scrap heap

LIKE many others, I was caught by the computer revolution and managed to persuade my parents to buy me a ZX-81 in March, 1982. Last Christmas I was given a Spectrum as well but now, after the joy of 48K and a reasonable keyboard, I find it extremely difficult to return to the primitive ZX-81 with its wobbling RAM pack.

The only trouble is that it seems impossible to sell on the second-hand market, although it is still working well and has had no faults. Are people still buying them? What can I do to sell it? Or should I put it down?

I must say, however, that all the time I have been using a computer I have been buying *Sinclair User* and *Sinclair Programs* and, for the money, I think they are the best. One of my favourite games was Treasure Hunt for the 16K ZX-81, which was published long ago. I intend to convert it with a more advanced version for my Spectrum.

Thank you again for a great magazine. Keep it up.

**J Freeman,
Wakefield,
West Yorkshire.**

Meet your match

IN THE APRIL edition of *Sinclair Programs* I saw a program called Matches for the ZX-81. Probably like many other people I considered it a good game, so decided to program it into my computer. When I had finished programming I ran the program and, after doing so many times, I found it was impossible to beat the computer, because the computer always takes away two of the 23 matches, leaving 21.

Then the person playing takes away either one, two or three of the matches. After

your turn the computer then does the same but always takes away such a number that both numbers added together make a total of four matches which have been taken away. It repeats that action every round until you find that you are forced to take away the last match. In the description of the game it said that it was not easy to win but I have found that to be untrue — it is impossible to win.

**Jason Goodwin,
Shaw, Olham.**

Alphabet record

IN *The Best of Sinclair Programs*, Spring/Summer, 1984 there was a program for the 16K ZX-81 called Alphabet Timer. The published record was 179 units. The first time I tried it I scored 564 units but the next time 109 units. I should be interested to know if anyone has beaten my score.

**Duncan Cayless,
Banbury, Oxon.**

Squashed ants

I AM writing to tell you about my highest score on Ant Raid, published in the April edition of *Sinclair Programs*. I managed to squash 56 ants before the ants ate my fruit. I would like to know if anyone has beaten my score.

**Stephen Tunstall,
Leyland,
Lancashire.**

Best programs

I ENJOY going to my local newsagent every month for my copy of *Sinclair Programs*. I started collecting the magazine at the beginning of the year. I found it had as many ZX-81 as Spectrum programs, which is unusual as well as fair. I had missed some programs in other issues so I was glad to see *The Best of Sinclair Programs*

where I found some of the programs I had missed. I would also like to wish *Sinclair Programs* good luck.

**Paul Taylor,
aged 12,
Shoreham-on-Sea,
Sussex.**

• The Best of Sinclair Programs, containing 100 of the best programs we published last year, is available from newsgagents now for £2.25.

48K problems

I AGREE that you have some exciting programs but when I bought my first edition, the April, 1984 issue, to my dismay I found of the 30 programs you printed only three were for the 48K Spectrum.

There are those of us who own them, although to look in your magazine you would not think so. I am sure I am writing for other 48K Spectrum owners who would appreciate it if you would print the same number of programs for the ZX-81 and both Spectrums.

**Kenneth Bridge,
Bedworth,
Warwickshire.**

• All Spectrum programs printed in *Sinclair Programs* will run on the 48K model. Those which are described as being for the 48K machine will run only on the 48K.

Drum analysis

I AM WRITING because I need a tuning instrument urgently for guitars or drums. I play tablas, a set of drums which require fine tuning. My ear is not, as yet, sufficiently developed.

In the March, 1984 issue of *Sinclair Programs* I saw a program called Voice Sound Analyser which would be satisfactory except that it is for a Spectrum and I have a ZX-81. Can the program be converted to run on a ZX-81? My machine is a 16K.

I think your magazine is the best for price against quality; all the other magazines are twice your price and I am amazed that they sell.

**Colin Green,
Portsmouth, Hampshire.**

• If any readers have converted *Voice Sound Analyser* for the ZX-81 please let us know and we can pass the information to the writer.

Jet set poke

FOR ALL Jet-Set Willy fans, here is a simple POKE to make Willy indestructible. All you have to do is type MERGE " " before LOADING. When the OK message appears type:

35 POKE 35899,0 (enter)

Then type RUN and start the tape. When the full program has loaded, Willy will be indestructible. If, however, you manage to get the program working so that Willy is being killed continually, CAPS SHIFT and BREAK will take you back to the music and triangle at the beginning of the program.

My record is 63 items collected.

**Dave Shortman,
Hull, East Yorkshire.**

Polish user

I AM SORRY about my poor English but I have not been to England for 37 years, since I was a Polish soldier. I hope that you can help me to improve my knowledge of the ZX-81 and English.

Could you send me listings, cassettes and books published for the 1K ZX-81? In exchange I can send you sets of Polish stamps. Do you have any philatelists among your readers? Can you also send me listings for games?

I hope that you can send me interesting programs for the 1K ZX-81. I can also speak Italian, Polish and German.

**Joszef Piotr Mrowiec,
wl. Anlotka nr 4,
Skr poczt. 2205,
40 936 Katowice Zalaze,
Poland.**

• If any reader is interested in contacting him, his address is given above.

Searching and sorting on Sinclair computers

If you have ever wondered what computers are really good at doing, wonder no longer — the answer is searching and sorting. They are so good at it that about 40 percent of all data processing on big computers is taken up by those two tasks alone.

Coming down to earth, humble ZX users can still make use of searching and sorting in our programs and many commercial programs we buy incorporate search and sort routines, even if we do not realise it.

The types of data we search and sort are numerous — pieces of text in word processing programs, records and fields in databases, and so on. As for sorting, the situation is the same — there are so many applications it is unbelievable. Games, too, can use search and sort techniques; the program of the month, **Mad Jumper**, uses a small sort routine to ensure the top five scores and names are kept in order.

The problem for the user of the routines is which to use. There are so many algorithms for searching and sorting that complete volumes have been written on the subject.

The reason behind this plethora is that each routine is good for a particular task. Taking sorting as an example, there are routines which are good for sorting small sets of numbers, large sets, medium-sized sets, even numbers in general. You name it and there is bound to be a search or sort routine to cater for your needs.

It should be noted that all searching and sorting should be carried-out on a data structure, in our case the array. It

Computers can examine data more quickly and efficiently than humans can. David Janda shows how you can make use of this ability in your programs.

can be numeric or string, with single or multiple dimensions. Searching or sorting can also be performed on strings and, to a degree, on memory locations but that is best done in machine code.

The two main reasons why searching/ sorting should be done on an array are because it is a convenient means of

Program 2.

```
10 REM STRING SEARCH
20 PRINT "ENTER STRING"
30 INPUT SS
40 PRINT "ENTER STRING TO BE
      SEARCHED FOR"
50 INPUT TS
60 FOR P=1 TO (LEN SS - LEN TS + 1)
70 IF SS$P TO (P+LEN TS)-1)=TS
    THEN PRINT "FOUND"
80 NEXT P
```

storing data and individual pieces of data can be referenced easily.

Program one is a sequential search of a numeric array. You can see that the array A is filled with the numbers from one to 10. You then enter the number you wish to look for and the program searches the array for the specified number which is held in T. Notice that the search line is in line 110, where the content of each element in array A is looked at.

Program two demonstrates how a string can be searched. Because the string-handling on Sinclair machines is very powerful, it allows us to examine any portion of the string to be searched. So string SS contains the main text and string TS contains the text to be searched for.

The business end of the program is the loop at lines 60-80. The loop index P is used as a pointer on the main string SS\$. As P is moved on to the next element — character — of the string, the target string TS\$ is compared to the main string from position P to P + the length of TS\$. If you have grasped that, you will understand why the length of the FOR..NEXT loop is not equal to

the length of SS\$. That is best demonstrated by an example:

If SS\$ contains THIS IS A STRING and TS\$ contains STRING, the length of SS\$ is 16 and TS\$ is 6. When the loop index P reaches 11, the situation looks like this:

```
THIS IS A STRING
      STRING
```

That is satisfactory and we have a match but if the loop boundary is extended to the length of SS\$, we might have a situation like this:

```
THIS IS A STRING
      STRING
```

An error would be reported because we have tried to reach beyond the length of string SS\$. Program two will not allow that to happen.

The last search to be dealt with is one of the fastest searches. To understand how it works, imagine you are looking for a telephone number for John Smith. You open the telephone directory and hold with one hand all the S section. Divide the S section in half and look at the name on the top. If it is greater than Smith you divide the section between the beginning and the opened section. If it is less than Smith, you divide the remaining section in half. That is repeated until you will finally reach the name you want.

The method is called a binary chop and it works by shrinking the area to be searched constantly as the search progresses. It is so efficient that if we could dimension an element of one million DIM A(1000000) it would need to look at no more than 20 entries before the item was found.

Program 3.

```
10 DIM A(1000)
20 FOR C=1 TO 1000
30 LET A(C)=C
40 NEXT C
50 PRINT "ENTER NUMBER TO
      FIND"
60 INPUT T
70 LET F=1
80 LET L=1000
90 LET M=INT ((F+L)/2)
100 IF T < A(M) THEN LET L=M-1
110 IF T > A(M) THEN LET F=M+1
120 IF F > L THEN GOTO 200
130 IF T < > A(M) THEN GOTO 90
140 PRINT "FOUND ";T
150 STOP
200 PRINT "FAILED TO FIND ";T
```

Program 1.

```
10 DIM A(10)
20 PRINT "ENTER 10 NUMBERS"
30 FOR C=1 TO 10
40 INPUT A(C)
50 NEXT C
60 PRINT "ENTER A NUMBER THAT
      YOU"
70 PRINT "IS IN THE ARRAY"
80 INPUT T
90 REM THE SEARCH
100 FOR C=1 TO 10
110 IF A(C)=T THEN GOTO 200
120 NEXT C
130 PRINT "THAT NUMBER IS NOT
      PRESENT"
140 GOTO 60
200 PRINT "FOUND ";T;" IN
      POSITION";A(C)
```

Program Tutor

Program 4.

```

10 LET P=10
20 LET X=0
30 LET T=0
40 LET Z=0
50 DIM A(10)
60 FOR C=1 TO 10
70 LET A(C)=INT(RND*65535)
80 PRINT AT C+5,10;A(C)
90 NEXT C
100 LET S=0
110 LET Z=Z+1
120 PRINT AT 21,20;"PASS ";Z
130 FOR C=1 TO 9
140 LET X=X+1
150 PRINT AT 21,0;"COMP ";X
160 IF A(C)<=A(C+1) THEN GOTO 360
170 PAUSE P
180 PRINT AT C+5,10;"(5* sp)"; AT C+5,16;A(C)
190 PAUSE P
200 PRINT AT C+6,10;"(5* sp)"; AT C+6,16;A(C+1)
210 PAUSE P
220 PRINT AT C+5,16;"(5* sp)"; AT C+6,16;A(C)
230 PAUSE P
240 PRINT AT C+6,4;"(5* sp)"; AT C+5,4;A(C+1)
250 PAUSE P
260 PRINT AT C+6,16;"(5* sp)"; AT C+6,10;A(C)
270 PAUSE P
280 PRINT AT C+5,4;"(5* sp)"; AT C+5,10;A(C+1)
290 PAUSE P
300 LET T=A(C)
310 LET A(C)=A(C+1)
320 LET A(C+1)=T
330 LET S=1
340 LET Y=Y+1
350 PRINT AT 21,10; "SWAPS ";Y
360 NEXT C
370 IF S=1 THEN GOTO 100

```

Enter and run program three which is set up with 1,000 numbers. To see the numbers being examined include the extra line 135 PRINT A(M).

The difficulty with many search algorithms including the binary chop is that the data to be searched must already be in an ordered form. There are so many sorts, each good for their own purpose, that it would be impossible to mention them all. Here is a small selection. One of the most common sorts is the bubble sort which is used extensively in data processing. Why it is used is beyond me, as it is one of the slowest and most inefficient sorts. The only good thing about it is that it is easy to implement and that, I suppose, is part of the reason for its popularity.

Pairs of numbers are considered and if one is greater than the next they are swapped. That happens until the end of the list is reached. Note that the list is not sorted yet and the program has to go through the list again until no more swaps are performed in a pass.

The data following represents one pass of the list. Note that the 21 has been shuffled to the right but the 9 has moved only one place to the left.

Enter and run program four, which not only sorts the five numbers but also

displays them bubbling up — hence the name — in order. To change the speed alter the value of P at line 10.

```

10 21 16 5 12 9
10 16 21 5 12 9
10 16 5 21 12 9
10 16 5 12 21 9
10 16 5 12 9 21

```

There are many other sorts — heap sort, insertion sort, quicksort and so on. Of them all, there is one which is very popular among micro users because it is fast.

Program 5.

```

10 DIM A(100)
20 FOR C=1 TO 100
30 LET A(C)=INT(RND*1000)
40 NEXT C
50 REM THE SORT
100 LET S=100
110 LET S=INT(S/2)
120 IF S=0 THEN GOTO 240
130 LET PL=100-S
140 LET J=1
150 LET I=J
160 LET L=I+S
170 IF A(I)<=A(L) THEN GOTO 210
180 LET T=A(I)
182 LET A(I)=A(L)
185 LET A(L)=T
190 LET I=I-1
200 IF I>=1 THEN GOTO 160
210 LET J=J+1
220 IF J>P THEN GOTO 110
230 GOTO 150

```

Program five is the ever-popular Shell-Metzner sort, one of the fastest. The operation is complex, so I will not explain it. Note that the bigger the list, the better the Shell-Metzner performs.

Program six is strange in that it sorts things in a random order. That may seem strange but it never repeats any number, so we can use it to shuffle a pack of cards.

Enter and run program six, which first will print the names of the cards in order and then shuffle the pack and print it again, but in its shuffled state. I leave it to you to determine how it works.

Program 6.

```

10 REM CARD SHUFFLE
20 REM CREATE CARDS
30 DIM A(52)
40 FOR A=1 TO 52
50 LET A(A)=A
60 GOSUB 250
70 NEXT A
80 REM SHUFFLE CARDS
90 LET B=52
100 LET C=0
110 LET R=INT(RND*B)+C
120 IF B=0 THEN GOTO 200
130 LET F=A(B)
140 LET A(B)=A(R)
150 LET A(R)=F
160 LET B=B-1
170 LET C=C+1
180 GOTO 110
190 REM DISPLAY CARDS
200 PRINT
210 FOR A=1 TO 52
220 GOSUB 250
230 NEXT A
240 STOP
250 IF A(A)<14 THEN LET S$="CLUBS"
260 IF A(A)>13 AND A(A)<27 THEN
    LET S$="DIAMONDS"
270 IF A(A)>26 AND A(A)<40 THEN
    LET S$="SPADES"
280 IF A(A)>39 THEN LET S$="HEARTS"
290 LET T=INT(A(A)/13)+1
300 IF A(A)=1 OR A(A)=14 OR A(A)=27
    OR A(A)=40 THEN LET N$="ACE "
310 IF A(A)=11 OR A(A)=24 OR A(A)=37
    OR A(A)=50 THEN LET N$="JACK "
320 IF A(A)=12 OR A(A)=25 OR A(A)=38
    OR A(A)=51 THEN LET
    N$="QUEEN "
330 IF A(A)=13 OR A(A)=26 OR A(A)=39
    OR A(A)=52 THEN LET N$="KING "
340 IF T>3 THEN LET T=A(A)-39:
    GOTO 380
350 IF T=3 THEN LET T=A(A)-26:
    GOTO 380
360 IF T=2 THEN LET T=A(A)-13:
    GOTO 380
370 IF T=1 THEN LET T=A(A)
380 IF T>1 AND T<11 THEN LET
    NS=STR$(T)+" "
390 PRINT NS;"OF";$S;" ";A(A)
400 LET S$="" : LET N$="" : LET
    T=0
410 RETURN

```

Wanted — racing driver, pilot, prime minister . . .

Simulation programs are fun and educational. Among a selection of excellent games, many of them best-sellers, we find one leads the field.

PEND YOUR TIME playing **Manic Miner** or **The Hobbit** and, although you may gain remarkable proficiency on the Spectrum keyboard, the chances are that you will not feel any better-equipped for any real-life experiences of wandering beneath the streets of Surbiton, or controlling the movements of a recalcitrant dwarf. Spend your time playing simulation games and not only will you enjoy some of the best games on the market but also you will benefit from the educational qualities of simulation games.

Whether your dream has always been to bring the government to its knees, form a successful rock band, become a millionaire or simply to get away from the city and take up sport in the countryside, there is a simulation game designed to help you achieve your dream in the comfort of your home. Simulation games put you into the place of another person, a jet pilot for example, provide some background information and instructions, and then allow you to make all the decisions.

Unrivalled success

In the field of simulation games nothing has arrived in the **Sinclair Programs** office to rival **The Forest** — Phipps Associates, 48K Spectrum. It is a simulation of that sport seemingly least likely ever to be played on a microcomputer, orienteering. Orienteering is essentially a crosscountry race across difficult terrain, to which has been added the extra dimension of navigational problems. Contestants are supplied with a map, on which is marked a number of points, each of which must be visited in order.

Points are often separated by lakes or dense forest, so the quickest route is not necessarily a straight line but can be found only by a skilled map reader. An

added complication is that the map, and the area, do not include roads, footpaths or streams, and so map and compass must be used throughout.

Graham Relf, author of **The Forest** has, amazingly, made it possible to orienteer with a Spectrum and, more incredibly still, has fitted 11,200 sq. km. of map into the program. When the game is loaded, the scene is the start of the course, on the edge of the town and the forest. Objective number one lies around 100 metres to the north-east and is marked by a flag on arrival. The map shows that a direct route would not be too difficult; most of it is downhill and the forest through which a straight path would run is not too dense.

It is difficult, however, to run even 100 metres through trees while trying to



follow a compass bearing, so the booklet accompanying the program suggests that beginners first aim for the nearby lake and then for the small flag in the middle of the forest.

The screen shows the view six metres in front of the player. It may be lake, tall trees, small trees, a town, or a selection of other types of terrain. Ten terrain symbols are shown on the screen at any time. Turning to right and left can be done by means of left and right cursor keys. Turning to face the way you have come is achieved by pressing the downward cursor key, and movement forward by pressing the upward cursor key.

Each step you take is roughly one metre long although, as in real life, your steps will vary in length and you will move with much more difficulty uphill through thick trees than when running downhill across grass. A sight set in front of you shows where the ground directly ahead of you would be if the ground were completely level. That gives a clear indication as to whether you are running uphill or downhill.

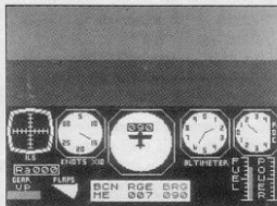
Running on a compass bearing is not possible with a computer. It is possible to estimate on which bearing you

should walk, and for how far, but most players will find that a ruler and protractor make life easier.

The forest is an extremely good educational aid for anyone wishing to teach or learn map reading, compass bearings, or simply the use of ruler and protractor. The map is very accurate and there is an immense sense of achievement to be gained from finding a flag after navigating through a kilometre of forest. The program also gives a clear idea of how contour lines marked on a map relate to hills and valleys. Experienced players will find that by following the curve of a hill as they run along, they can follow contour lines on the map, which can be very helpful when crossing large areas of forest.

Best-selling programs

Better-known simulation games are the flight simulation programs **Flight Simulation** — 48K Spectrum and 16K ZX-81, Sinclair Research — and **Fighter Pilot** — 48K Spectrum, Digital Integration — both best-selling programs. Flight Simulation allows the player to take off, fly and land an aeroplane. The aircraft controls are complex and so the long instructions should be read in full before any attempt at flying is made. Despite that, first flights tend to be unmitigated disasters. Experience quickly makes the controls and instru-



ment panels sufficiently comprehensible to make taking-off and flying possible.

The most difficult aspect of Flight Simulation is landing. There are 13 control keys to remember with which the aircraft can be controlled and even experienced simulator pilots tend to find that number is around 12 controls too many when trying to reduce height and speed at the appropriate rate, while keeping on course and keeping the air-

craft level. Fighter Pilot gives the player a bigger range of options than Flight Simulation. The player can choose between being a trainee, squadron instructor or ace pilot. Flight, take-off and landing can be practised with or without the effect of cross-winds and turbulence. As can be deduced from the program title, other options include not more complicated routes or aerial manoeuvres but the opportunity to kill as many other pilots like yourself as you wish.

While both Fighter Pilot and Flight Simulation are excellent simulation programs, the wider range of options open



to the player in Fighter Pilot provide a more lasting challenge.

Chequered Flag — Sinclair Research, 48K Spectrum — is also a well-known example of a simulation game. The screen display is of the driver's view from a racing car. Before the game begins the driver can choose between three cars and a variety of the most famous racing circuits in the world.

As in a real car, there are a variety of controls from which to choose, although in a real car drivers are not expected to steer, accelerate, brake and change gear all with their hands. Moving at high speed is hair-raising enough, without the added difficulty of having to search for the brake quickly among a group of very similar Spectrum keys.

Not a novel experience

As a simulation the game is not as successful as flight simulation programs, partly because the large number of its imitators make the idea of driving a car on your Spectrum seem stale. Driving a car or being driven in a car is not a novel experience for Spectrum owners and so differences from real life are much more apparent than when trying to fly an aeroplane.

1984 — Incentive Software, 48K Spectrum — gives the player control of the Government of Britain from 1984 onwards. All decisions on Government spending and allocation of resources are made by the player. Radical changes in spending will not be accepted by the

computer and budgetary changes which leave certain departments short of money will be queried by the computer before they are accepted.

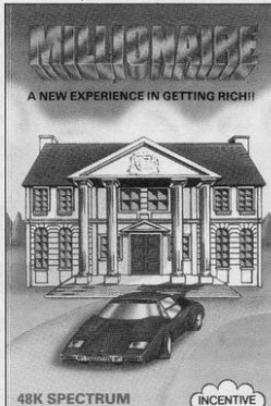
Management game

1984 states that it is "a game of Government management" and so computer owners wishing to become involved in other aspects of British political activity, or to overthrow the Government and set up a different political system, will not find it suited to their needs.

The cassette insert includes a complex diagram, demonstrating how different sections of the economy are linked and what effects budgetary changes in any area will have. Students of economics or government may find it a helpful game to play, although it is necessarily simplistic in some areas.

It is a complex and well-thought-out simulation game. People using it for educational purposes, though, will find that the help of an experienced teacher would be necessary to indicate the problems which necessarily will arise when the player attempts to run the country on a microcomputer.

Rather more frivolous is **Millionaire** — Incentive, 48K Spectrum. The game



involves running a software company and the aim is to make a million pounds. It is fast-moving, easily comprehensible but necessarily repetitive with clear graphics on-screen. Decisions must be made as to which kind of software should be written, how much should be produced, how it should be advertised, and how it should be marketed.

As profits increase, the size of your

house, shown at the beginning of each round, will increase from being a small terrace to a large mansion.

Production of cassettes cannot exceed a certain level each month, so once you have made all the correct decisions and are selling out of stock each month there is no chance of becoming an overnight success. Another problem with the game is the irritating over-use of a luck element throughout, so that making the same decisions two games running will produce very different results.

Over-use of chance is always a flaw in a simulation game and in Millionaire it gives rise to the suspicion that success would be obtained as quickly by throwing dice to make decisions.

Busking in the subway

Along the same lines as Millionaire is **It's Only Rock 'n' Roll** — Virgin, 48K Spectrum. The aim is to make it as a rock star, "making it" being defined in this case as earning a million pounds and acquiring three status symbols. From busking in the subway it is possible to rise to tours of Japan and the U.S., number one hit records and sold-out concerts at Wembley Stadium.

All that takes time, however, and Virgin judges rock stars to be over the hill within five years of the start of the game, or fewer if you choose a more difficult level. It is necessary, therefore, to take a few risks to achieve high popularity levels as quickly as possible. It is disappointing that once you have made it in the set time there is no winning display — you continue the game until you are over the hill and then finish.

Very similar sieges

A similar lack of any appropriate ending is apparent in **Jerico 2** — Elephant Software, 48K Spectrum. The game can be considered with **Fort Apache** — Contrast Software, 16K Spectrum — as, except in theme, the two games are remarkably similar in all respects. In both the player leads a siege, in one case on an Apache fort, in the other on the city of Jerico.

Battles must be fought, weapons and equipment built and supplies fetched. Not the most accurate of simulations and not the most involving, either. Success can be obtained on Jerico 2 within half an hour, though Fort Apache is slightly more difficult.

Despite the similarities of the games, Fort Apache is better than Jerico 2, as it makes full use of the ZX-81 facilities.

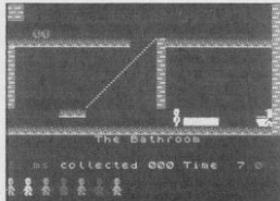
Surbiton millionaire jet sets on to screen

IN THE BEGINNING was **Manic Miner**, the game with the potential to break up more friendships and families than any others. Obsessed players, with eyes for nothing but Miner Willy and the mines beneath Surbiton, played all day and all night long.

Now there is **Jet Set Willy**, which is more fun, more enjoyable and more addictive than almost any game on the market. It is so addictive that not only did our review department play it for hours but members of our circulation and advertising departments remained after hours to play.

Willy, having made his fortune in the mines beneath Surbiton, must clean up his mansion after a wild party before his housekeeper will allow him to go to bed. Each room contains an obstacle course and various enemies to be avoided. Superbly animated characters fill each room, each posing a threat to the miner. The game is also a form of maze, for some rooms may be reached only by a long and tortuous route. Other rooms, such as the wine cellar and the yacht, need very exact timing to make escape possible.

At first sight the pace of the game is sedate. Willy strolls along, bounces gently upwards, and reaches for the litter strewn round the house. Meanwhile the security guards, demons and revolving peardrops move relentlessly onwards

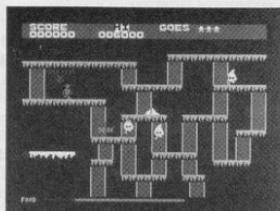


and the hapless player hammers at the keys.

There can be months of enjoyment from this original and brilliant game. Any Spectrum owner willing to sacrifice sleep and peace of mind should rush out and buy it immediately.

Jet Set Willy is produced for the 48K Spectrum by Software Projects, Bear Brand Complex, Allerton Road, Woolton, Liverpool. It costs £5.95.

This month we focus on the exploits of hero Willy after his mining experience and on some of the best and worst new Spectrum games.



The Snowman

THE SNOWMAN — 48K Spectrum, £5.95 — is not a new concept in computer games. It is, though, a brilliant example of a fusion of the best elements from some games already on the market, with several new ideas. The result is an attractive, gentle game which will appeal to all kinds of computer owner.

The central character must be moved round an ice structure, made up of several levels linked by ladders. On the first level the aim is to build a snowman by collecting snow from the ice structure and carrying it to the appropriate site. The main difficulty is to move the wandering flames, which will melt any snow which is being carried. If you fall from the ice structure or run out of energy you simply drift down to bed at the bottom of the screen.

An easy way of amassing points is to remain on the first level and not collect snow but instead collect the food and gifts which appear at intervals. The food supplies energy, the gifts supply points, and the only way of losing is to fall off the ice structure.

More daring players will prefer to complete their snowman as soon as possible to move to the next level. There are four levels with the same layout and they are then repeated with a

different layout. The second level involves collecting the snowman's features, the third his clothes, and the fourth ice cubes to prevent him melting. Those levels are made more difficult by the sleep monsters which send you to sleep on contact and which can be defeated only by collecting alarm clocks. Quicksilva, 13 Palmerston Road, Southampton SO1 1LL.

The Pyramid

THE PYRAMID, by Fantasy Software, sends its players searching through the 15-level pyramid in search of the Ultimate Answer to Life, the Universe and Everything.

Each chamber of the pyramid is occupied by a different type of alien. To escape from a chamber, crystals must be used to neutralise the energy fields around the exit and to obtain a crystal a certain number of aliens must be destroyed.

Points are gained for the speed with which a chamber is negotiated, so the more quickly the player acts the better. Aliens must be avoided, which is not always an easy task, as each type of alien has a different flight path. Crystals must be caught at the appropriate time, guarded from destruction by aliens, and negotiated to an exit as quickly as possible.

The Pyramid works with Fuller, Kempston, AGF/Protek and Mikrogen joysticks and contains four keyboard options. It is produced for the 48K Spectrum by Fantasy Software and can be bought at W H Smith for £5.50.

Pedro

PEDRO is the eponymous hero of a new game for the 48K Spectrum. To preserve his garden, he must build a wall round it, stamp out any animals which appear, plant new seeds, and scare away the tramp who tries to steal his seeds.

Finding the correct point to stamp on an animal, pick up a brick or even plant a seed is very difficult, and since so much attention must be paid to that detail, the game quickly loses its sparkle. It is from Imagine House, 5 Sir Thomas Street, Liverpool and costs £5.50.



Sorcery

SORCERY — 48K Spectrum £5.95 — has a very ambitious scenario. The Necromancer and his demonic servants have conquered the earth, causing it to fall into the dark ages. The player is the last of the great sorcerers and it is the player's task to cross the 15 screens between the sorcerer's homeland and Stonehenge to rescue fellow sorcerers and save the world from eternal darkness.

For those who enjoy arcade games, *Sorcery* is fast and furious. The sorcerer and his enemies are large sprite graphics, the course is a form of a maze, and objects to be found on the way are useful, although their uses can be found only by experiment. The major disadvantage of the game is the keys used for movement. Q and A move the sorcerer left and right and there is no chance to re-define keys. From Virgin Games, 61-63 Portobello Road, London W11.

Timebomb

TIMEBOMB — Spectrum £5.95 — is a game which calls for fast reactions and even faster thinking. The player moves round a grid, trying to reach the time bomb as quickly as possible. If a bomb is left for too long it will explode. Each square of the grid can be touched only once on each screen and six bombs must be defused on each screen. Further complications are the static skulls and walking boots which are deadly to the touch.

The game is simple in concept and infuriatingly difficult to complete. It does not, however, have the sophistication and lasting appeal of many games on the market. To represent value for

money it would have been better presented on a cassette with other games of a similar standard. From CDS Microsystems, 10, Westfield Close, Tickhill, Doncaster DN11 9LA.

Ometron

OMETRON — 48K Spectrum, £5.95 — leaves its player stranded on an uninhabited outpost of an empire to protect the landing pad there from hostile forces. The player is situated in the middle of the landing grid in a revolving turret aiming cannons.

It is yet another of those arcade-type games where the aim is to blast a number of three-dimensional space ships into oblivion and is very boring. From Software Projects, Bear Brand Com-



plex, Allerton Road, Woolton, Liverpool.

The Island

THE ISLAND — 48K Spectrum, £7.50 — is an adventure game in which the aim is to escape from a Pacific island with the treasure. The program is infuriating, for it is not an adventure which can be worked through steadily, and in which death is the inevitable consequence of bad decision-making.

Moving in certain directions will kill you instantly, without warning. One object explodes unexpectedly, another causes death if you go the wrong way with it. You survive by chance and not by skill.

It seems unlikely that any Spectrum owner will find it fun for more than a few minutes to play this repetitive, text-only adventure, which is filled with instances of the programmer's inane

humour. It appears to be aimed solely at players who never read reviews. Do not be tempted to buy it. Crystal Comput-

THE ISLAND



ing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX.

Rommel's Revenge

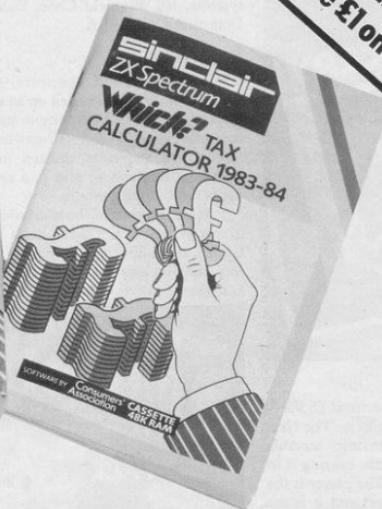
CRYSTAL has produced some excellent games for the Spectrum, so when the cover for *Rommel's Revenge* claims it is "a brilliant interpretation of the most visually stunning arcade game ever" it is tempting to believe it. Do not believe it.

Nowhere is the aim of the game explained, so players who have never seen the arcade game will be mystified. The reviewer was mystified. Thunder across the landscape in a tank which crashes into strange, geometric frameworks with no apparent effect, aiming for mountains which are never reached.

At that moment another tank appeared. For lack of anything else to do, it was shot. The score chart indicated that was a good thing to do, so other hapless tanks to destroy were sought. With radar scanned, the tank thundered across the landscape again. At long last another tank appeared and was shot. After another long delay, a second tank appeared, to be shot as well.

Rommel's Revenge is not gripping and it is certainly not the spectacular game claimed on the cassette cover. It also appears to be pointless. It is produced for the 48K Spectrum by Crystal Computing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX and costs £6.50.

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PEARL DIVER



PHILIP NEWBY of Dobcross, Oldham, wrote Pearl Diver for the 48K Spectrum. The king has sent you on a mission to collect six pearls from the legendary oyster. Dive into the ocean from your boat and collect the pearls, while avoiding the octopus, piranhas and shark. Each time you pick up a pearl you must return with it to your boat and dive again for the next one. If you disturb the oyster the game will end.

```

10 GO SUB 7500: GO SUB B000
100 LET mx=2; LET my=30; LET bx=3;
LET by=m-6; LET bo=1; LET s=z=5;
LET sy=3; LET ox=10; LET oy=28;
LET px1= INT ( RND *8)+5; LET py1= INT ( RND *20)+5; LET px2= INT ( RND *8)+5; LET py2= INT ( RND *20)+5
110 LET of="" : LET zf="" : LET s="#": LET sd=1; LET od=-1
120 DIM p$(2,3,3); LET pid=2: LET p2d=1
130 LET p$(1,1)="H": LET pearl=o:
131 LET p$(1,3)="H": LET bf=""
132 LET p$(1,2)="HH"
133 LET p$(2,1)="I"
134 LET p$(2,2)="II"
135 LET p$(2,3)="I"
150 LET dead=5000: LET deader=500: LET win=6000:
1000 LET bx1=bx: LET mx1=mx: LET my1=my: LET by1=by: LET sx1=sx: LET sy1=oy: LET ox1=ox: LET oy1=oy: LET px1=px1: LET px21=px2: LET py11=py1: LET py21=py2
1010 PRINT INK 7; PAPER 1; AT b:x,y-1;"F(S+igBG)": AT mx,y1; INK 9; PAPER B;("D" AND ((mx <= 3 OR mx > 3 AND INKEY# <> "7"))): AT bx1,y-1; INK 7; PAPER 1;"#bf#"
1020 PRINT AT ox,oy-1; INK 4; PAPER 5;o: AT sx,sy-1; INK 1; PAPER 5;z:
1030 FOR f=1 TO 3: PRINT AT px1+f,py1; INK 2; PAPER 5;p(px1,f); AT px2+f,py2+p(pz,d,f); NEXT f
1040 LET mx=mx+( INKEY# == "8" AND mx<18)-( INKEY# == "7" AND mx>2)
1045 LET my=my+( INKEY# == "B" AND my<31)-( INKEY# == "5" AND my>0)
1050 LET by=by+( INKEY# == "B" AND bo=1 AND by<31)-( INKEY# == "5" AND bo=1 AND by>1)
1060 IF mx <> 2 THEN LET bo=0
1061 IF mx=2 AND my=by+6 THEN L ET bo=1
1070 LET sy=sy+sd: IF sy=3 THEN LET sd=1:
1071 LET s#="JAK": IF sd=-1 TH EN LET s#="LAM"
1075 IF sy==29 THEN LET sd=-1:
1080 LET oy=oy+od: IF oy=3 THEN
1081 LET od=1:
1081 LET of="NO": IF od=-1 THE N LET o="#RS"
1082 LET z="#PQ": IF od=-1 THE N LET z="#TU"
1085 IF oy>28 THEN LET od=-1:
1087 IF mx < 3 THEN GO TO 1096
1090 LET px1=px1-.25*(mx<px1 AND px1<3)+.25*(mx>px1 AND px1>2)
1091 LET py1=py1-.25*(my<py1)+.25*(my>py1)
1092 LET py2=py2-.25*(my<py2)+.25*(my>py2)
1093 LET px2=px2-.25*(mx<px2 AND px2<3)+.25*(mx>px2 AND px2>2)
1094 LET pid=(2 AND my>py1)*(1 A ND my<py1)+(1 AND my>py1)
1095 LET p2d=(2 AND my>py2)+(1 A ND my<py2)+(p2d AND my>py2)
1096 LET mx1=mx AND ATTR (mx,my)=47 THEN LET pearl=1
1097 IF mx<18 AND (SCREEN# (mx,my)<=" " AND ( ATTR (mx,my)>40 AND ATTR (mx,my)<45)) THEN LET r #="blood": GO TO deader: REM someone else got you
1100 IF pearl=1 AND bo=1 THEN L ET b#=b#+"B": LET pearl=0: IF b#
=5500 FOR f=1 TO 50: LET a#my1*B+4+( RND *16-B): LET b=(21-mx1)*B+4+( RND *16-B): PLOT INK 2;(a AND (a>0 AND a<255)),(b AND (b>0 AND b<255)): NEXT f: GO TO 5000
5999 STOP
6000 PAPER 4: BORDER 4: CLS
6010 PRINT AT ;10;"(ig12*sp1"

```

```

g2:((2+sp1)g2)
6020 PRINT AT 8,10;"(ig8:ig1:ig
2+sp1:ig1:ig2:ig2)
6030 PRINT AT 9,10;"(ig8:B:sp1
g8)
6040 PRINT AT 10,10;"....."
6050 PRINT "Well Done !!! The ki
ng is pleased and gives yo
u a large reward"
7000 STOP
7500 CLS : PRINT AT 1,1; INK 2;
"PEARL DIVERT";
7510 PRINT AT 3,0; INK 9;"You p
lay the part of the King's pearl
diver the king has told you t
o get the six pearls from the l
egendary great oyster. The s
ea around the oyster is full
of nasty creatures such as shark
s piranhas and octopus which
would all like to eat you. You c
an only carry one pearl at once
and you take it to the right
side of your boat where it stack
s itself and you can get another ";
7520 PRINT : PRINT "You use the
cursor keys to move your man
Pr
ess any key to play ":" PAUSE 0;
RETURN
8000 GO SUB 9000 BORDER Ed: PAPE
R 5: INK 9; CLS
8005 FOR f=10 TO 245 STEP 5; PLO
T INK 4; f; f; DRAW INK 4;0;16+
RND *8; END (*2)-1; NEXT f
8010 FOR f=10 TO 2.1 STEP 1; f; PLO
T INK 5;52; DRAW INK 1;100;
0,f; NEXT f
8033 PRINT AT 21,9; INK 4;"(ig2
:ig1)"; AT 21,16;"(ig2:ig3)"
8040 PRINT AT 17,75; INK 2;"C";
FOR f=1 TO 12 STEP 2; PRINT AT 17
,17+f; INK 7;"B"; INK 2;"C": NE
XT f
8080 FOR f=0 TO 3; PRINT AT f,0;
PAPER 1; OVER 1; TAB 31; "i N

```

```

EXT f
8999 RETURN
9000 RESTORE : FOR f = USR "a" TO
USR "u"+7: READ a: POKE f,a: NEXT f
9010 DATA 24,60,255,255,255,255,
24,0
9020 DATA 60,126,255,255,255,255,
126,50
9030 DATA 0,0,0,60,126,126,255,255
9040 DATA 24,60,24,60,126-60+24,
60,124-60
9050 DATA 126-60,126-60,126-60,6
0,126-60+24,60,24,60,24
9060 DATA 255,127,65,31,15,7,3,1
9070 DATA 1,3,7,15,31,63,127,255

9080 DATA 0,24, BIN 111101, BIN
11011111,127, BIN 11101, BIN 1111
000,0
9090 DATA 0,24, BIN 10111100, BIN
11101101,254, BIN 10111000, BI
N 1110,0
9100 DATA BIN 1100000000, BIN 111
0000, BIN 111111, BIN 11111, BIN
111, BIN 1100, BIN 1000,0
9110 DATA 0,0,255, BIN 11101110,
BIN 11111000, BIN 11100000,0,0

9120 DATA 0,0,355, BIN 1110111,6
3, BIN 1111,0,0
9130 DATA BIN 11, BIN 1110, BIN
11111100, BIN 11111000, BIN 111
10000, BIN 10000, BIN 10000,0

9140 DATA 128, BIN 1111100, BIN
110, BIN 1110010, BIN 10011010,
BIN 1010, BIN 1001111, BIN 10000
111
9150 DATA 0,0,60,126, BIN 111001
11, BIN 11110011, BIN 11100111,2
55
9160 DATA BIN 10111111, BIN 110
1111, BIN 1010, BIN 10011010, BI
N 1110010, BIN 110, BIN 1111100,
128

```

```

9170 DATA 255, BIN 11000111, BIN
11100011, BIN 1100011, BIN126,60,
,0
9180 DATA 0,0,60,126,231, BIN 11
001111,231,255
9190 DATA 1, BIN 111110, BIN 11
0000, BIN 1001110, BIN 1011001,
BIN 1010000, BIN 11010110, BIN 1
111101
9200 DATA 255,231, BIN 11001111,
231,126,60,0,0, BIN 11000000, BIN
11110000, BIN 01000000, BIN 010
0000, BIN 01001110, BIN 11000000
BIN 111100,1
9987 RETURN

```



```

1 LET L=3
2 LET S=-1
3 FRST
4 CLS
5 LET S=S+1
6 PRINT AT 0,0;"*****" HT 21,0"*****
7 ****
16 FOR F=1 TO 21
17 PRINT AT F,0;"■";AT F,31;"■"
18 NEXT F
19 FOR F=1 TO 10
20 PRINT AT RND*10+5,RND*31;"■"
21 NEXT F
22 LET E=20
23 LET X=INT (RND*29+1)
24 PRINT AT 0,X;"■"
25 SLOW
26 FOR Y=1 TO 21
27 PRINT AT 21,E,"■"
28 LET X=X+(E*X)-(E*X)

```

```

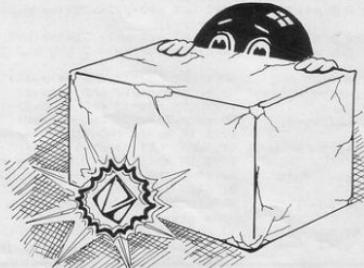
90 PRINT AT Y,X;
100 LET P=PEEK (256*PEEK 16399+
PEEK 16398)
110 PRINT "*"
120 IF P=128 THEN GOTO 10
130 LET E=E+(INKEY$="8" AND E<3
0)-(INKEY$="5" AND E>1)
140 PRINT AT 31,E; "#"
150 PRINT AT Y,X; "#"
160 NEXT Y
170 FOR F=1 TO 20
180 PRINT AT Y-1,X;"#"
190 PRINT AT Y-1,X;"*"
200 NEXT F
210 LET L=L-1
220 IF L=0 THEN GOTO 500
230 GOTO 10
240 PRINT AT 10,8;"*****SCORE: "
250 ****"*****
260 PRINT AT 20,10;"PRESS TO RE
START"
270 IF INKEY$="" THEN GOTO 520
280 RUN

```

LORDSTONE

A BALL falls from the top of the screen and is attracted to the loadstone at the bottom. Using keys 5 and 8 to move left and right, you must move the black blocks so that they block the path of the ball. If the ball reaches the loadstone three times the game ends.

Loadstones was written for the 16K ZX-81 by Luuk Hilhorst of Assendelft in the Netherlands.



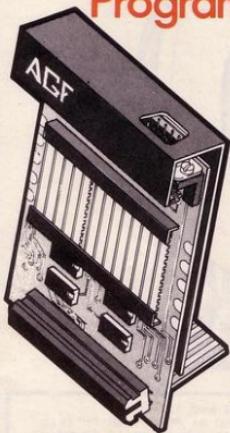
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JOYSTICKS

SPECTRUM & ZX81

INTERFACES

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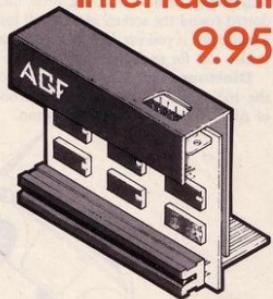
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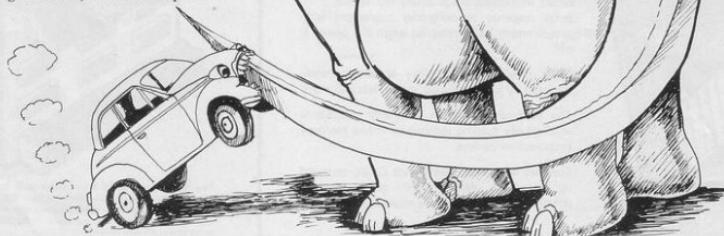




DINOSAUR MUNCHER

STEER your car across the screen, munching the dinosaurs as you meet them. Avoid the little men dotted round the screen as you will lose a fuel point if you eat them. A fuel point is also lost for each journey made.

Dinosaur Muncher was written for the 16K Spectrum by Laurence Wood of Abingdon Park, Wolverhampton.



```

1 CLS : GO SUB 300: LET h=0
2 RESTORE : PRINT AT 10,0;"-----Dinosaur Muncher-----";
; AT 12,B;"By Laurence Wood"; AT 20,0;""
3 FOR F=0 TO 25: PRINT
AT 15,F;" RC M": BEEP .005,F: BE
EP .005,F+10: NEXT F
3 INPUT "Would you like to re
ad the instructions (y/n)
?"; i$: IF i$="y" OR i$="Y" THEN
GO SUB 600
5 LET k=2: LET s=0: LET l=0

10 CLS : INK 1: BORDER 4: PAPER
R 6: CLS
20 PRINT AT 0,0; 1; "sc
ore", INVERSE 1;"DINOSAUR MU
NCHER"; INVERSE 0;"---hi "
30 PRINT AT 1,0; INK 6: PAPER
1;"*****"
40 PRINT AT 1,27;h
40 PRINT AT 21,0; INK 5: PAPER
R 0;"FUEL
FULL"
50 FOR f=0 TO 60
60 PRINT AT ( RND *18)+2,( R
N D *2B)+3; INK 2;"H"
61 NEXT f
65 FOR f=0 TO 20
70 PRINT AT ( RND *18)+2,( R
N D *2B)+3; INK 0;"H"
80 NEXT f
85 BEEP .2,0: BEEP .5,20
99 LET f=26
100 FOR l=0 TO 28
110 PRINT AT k,1;" RC"
111 PRINT AT 1,0; PAPER 1; INK
6:-
120 IF ATTR (k,1+3)=50 THEN B
EEP .005,10: BEEP .006,20: PRINT
AT k,1+3; PAPER 6;"": LET s=s+
10
130 IF ATTR (k,1+3)=48 THEN B
EEP .08,-10: BEEP .08,-30: PRINT
AT k,1+3; PAPER 6;"": LET f=f-
1
135 IF INT ( RND *7)=0 THEN P
RINT AT ( RND *18)+2,( RND *2B),
+3; INK 0;"H"
136 IF INT ( RND *7)=0 THEN P
RINT AT ( RND *18)+2,( RND *2B),
+3; INK 2;"H"
137 IF INKEY$="d" AND k>2 THE
N PRINT AT k,1;"": LET k=k-
1
138 IF INKEY$="c" AND k<20 TH
EN PRINT AT k,1;"": LET k=k+
1
140 PRINT AT 21,f;""
141 IF INT f=4 THEN GO TO 180.
149 NEXT I
150 LET f=f-1
155 PRINT AT k,1;"": LET k=
k+1: IF k>21 THEN GO TO 100
160 LET k=k-2: GO TO 100
180 PRINT AT 21,0; BRIGHT 1; P
APER 3; INK 7; FLASH 1;""
--FUEL TANKS EMPTY-----
190 BEEP .5,.0: BEEP .2,.4: BEEP
.2,.5: BEEP .2,.7: BEEP .2,.0
200 PAPER 5: FOR f=0 TO 100: NE
Xt f: CLS : PRINT AT 10,3; INK
1;"SCORE" = "5"
210 IF s>0 THEN LET h=s: BEEP
1,20: PRINT AT 15,10; FLASH 1;
PAPER 4;"NEW HIGH SCORE"
220 PRINT AT 20,4; " ANY KEY T
O RE-PLAY": PAUSE 0
230 GO TO 2
300 FOR k=0 TO 7
310 READ b: POKE USR "r"+k,b
320 DATA 0,0,32,16,12,19,18,12
330 NEXT k
340 FOR l=0 TO 7
350 READ b: POKE USR "e"+k,b
360 DATA 0,0,0,192,192,240,234,
16
370 NEXT k
400 FOR k=0 TO 7
410 READ b: POKE USR "m"+k,b
420 DATA 96,228,34,50,50,52,44,
96
430 NEXT k
500 FOR k=0 TO 7
510 READ b: POKE USR "h"+k,b
520 DATA 24,36,36,24,231,24,24,
102
530 NEXT k
540 RETURN
600 BORDER 2: PAPER 5: INK 1: C
LS : PRINT AT 0,3;"GUIDE TO DIN
OSAUR MUNCHING": AT 3,2; INK 0;"Using key 'D' for up, and key 'C
' for down, steer your dinosaurus-m
unching racing car to eat the r
ed dinosaurs, and avoid the litt
le men ."
610 PRINT ; INK 1;" 10 point
s are given for each dinosaur m
unched, but a unit of fuel is 1
lost for each man eaten, and for e
ach journey across the screen."
620 FOR f=1 TO 100: NEXT f: PRI
NT AT 20,10;" ANY KEY TO START"
: IF INKEY$ = "" THEN GO TO 620
630 BEEP .5,10: RETURN

```

SWIMMING GALA

```

1 LET X=100
2 LET G=100
3 LET F=100
4 LET D=100
5 LET S=100
6 LET H=100
7 LET T=100
8 LET W=100
9 LET U=100
10 CLS
11 PRINT "HOW MUCH OF YOUR £";
12 DO YOU WANT TO BET ?"
13 INPUT P
14 CLS
15 LET W=INT (RND*33)+1
16 LET E=INT (RND*33)+1
17 LET R=INT (RND*33)+1
18 LET T=INT (RND*33)+1
19 LET Y=INT (RND*33)+1
20 LET U=INT (RND*33)+1
21 LET I=INT (RND*33)+1
22 PRINT "CHOOSE YOUR SWIMMER."
23 PRINT AT 3,0;"1";"U";"-1"
24 PRINT AT 6,0;"2";"R";"-1"
25 PRINT AT 9,0;"3";"T";"-1"
26 PRINT AT 12,0;"4";"Y";"-1"
27 PRINT AT 15,0;"5";"U";"-1"
28 PRINT AT 18,0;"6";"I";"-1"
29 PRINT AT 21,0;"7";"I";"-1"
32 INPUT B
33 CLS
34 FOR A=0 TO 21
35 PRINT AT A,1;""
36 NEXT A
38 PRINT AT 0,1;" 1 2 3
4 5 6 7 "
39 PRINT AT H,4;"1";AT H+1,4;""
40 PRINT AT J,8;"2";AT J+1,8;""
41 PRINT AT G,12;"3";AT G+1,12
42 PRINT AT F,16;"4";AT F+1,16
43 PRINT AT D,20;"5";AT D+1,20
44 PRINT AT S,24;"6";AT S+1,24
45 PRINT AT Q,28;"7";AT Q+1,28
100 LET H=INT (RND*2)
101 LET J=INT (RND*2)
102 LET G=INT (RND*2)
103 LET F=INT (RND*2)
104 LET D=INT (RND*2)
105 LET S=INT (RND*2)
106 LET I=INT (RND*2)
107 IF H<=0 THEN GOTO 200
108 IF J<=0 THEN GOTO 300
109 IF G<=0 THEN GOTO 400
110 IF F<=0 THEN GOTO 500
111 IF D<=0 THEN GOTO 600
112 IF S<=0 THEN GOTO 700
113 IF I<=0 THEN GOTO 800
120 GOTO 39
125 CLS
130 IF B=1 THEN LET X=X+P+W
135 IF B>1 THEN LET X=X-P
140 GOSUB 950
145 PRINT AT 8,15;"1"
150 PAUSE 400
160 IF X=0 THEN GOTO 2000
165 GOTO 3000

```



AFTER PLACING your bet you can choose the swimmer you think will win. The race will then begin and the seven swimmers must complete one length of the pool. Once the race is finished the winner is shown standing on a rostrum.

Swimming Gala was written for the 16K ZX-81 by Graham Turpin, aged 12, of Tonbridge, Kent.

```

300 CLS
310 IF B=2 THEN LET X=X+P+E
320 IF B>2 THEN LET X=X-P
330 GOSUB 950
340 PRINT AT 8,15;"2"
350 PAUSE 400
360 IF X=0 THEN GOTO 2000
365 GOTO 3000
380 CLS
390 IF B=3 THEN LET X=X+P+R
400 IF B>3 THEN LET X=X-P
410 GOSUB 950
420 PRINT AT 8,15;"3"
430 PAUSE 400
440 IF X=0 THEN GOTO 2000
445 GOTO 3000
460 CLS
470 IF B=4 THEN LET X=X+P+T
480 IF B>4 THEN LET X=X-P
490 GOSUB 950
500 PRINT AT 8,15;"4"
510 PAUSE 400
520 IF X=0 THEN GOTO 2000
525 GOTO 3000
540 CLS
550 IF B=5 THEN LET X=X+P+Y
560 IF B>5 THEN LET X=X-P
570 GOSUB 950
580 PRINT AT 8,15;"5"
590 PAUSE 400
600 IF X=0 THEN GOTO 2000
605 GOTO 3000
620 CLS

```

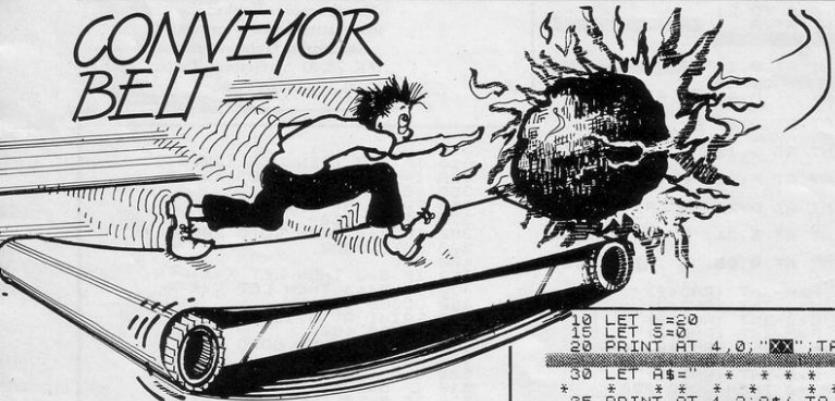
```

710 IF B=5 THEN LET X=X+P*I
720 IF B>5 THEN LET X=X-P
750 GOSUB 950
750 PRINT AT 8,15;" "
770 PAUSE 400
780 IF X=0 THEN GOTO 2000
790 GOTO 3000
800 CLS
810 IF B=7 THEN LET X=X+P*I
820 IF B>7 THEN LET X=X-P
850 GOSUB 950
850 PRINT AT 8,15;" "
870 PAUSE 400
880 IF X=0 THEN GOTO 2000
890 GOTO 3000
950 FOR H=15 TO 21
950 PRINT AT H,5;" "
960 PRINT AT H,5;" "
965 NEXT H
970 PRINT AT 17,14;"1ST"
980 PRINT AT 14,13;" ",AT 1
3,14;" ",AT 12,14;" ",AT 11,
14;" "
1010 PRINT AT 10,14;" ",AT 9,1
4;" ",AT 8,12;" ",AT 7,1
2;" ",AT 6,15;" ",AT 5,14;
" ",AT 4,14;" ",AT 3,14;" "
1020 PLOT 29,36
1025 PLOT 32,36
1030 IF X=0 THEN PRINT AT 20,12;
880 LUCK"
1035 RETURN
1040 CLS
1050 PRINT AT 10,5;"SORRY, YOUR B
OKE"
1050 STOP
3000 IF X>=10 THEN GOTO 3010
3010 PRINT AT 0,5;"ANOTHER BET"
(Y/N)"AT 2,5;"YOU HAVE ",X," POU
NDS LEFT"
3012 PAUSE 4E4
3015 IF INKEY$="Y" THEN GOTO 2
3020 IF INKEY$="N" THEN CLS
3025 PRINT AT 10,0;"YOU ENDED UP
WITH ",X," POUNDS"
3030 STOP

```



CONVEYOR BELT



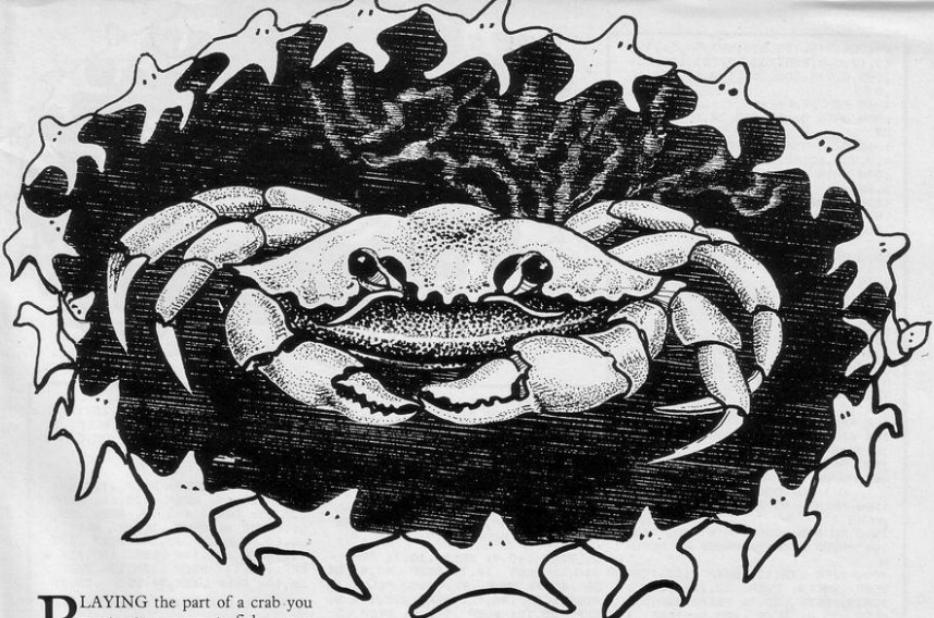
HELP YOUR man to avoid a sticky end as he tries to survive on a fast-moving conveyor belt heading towards a pot of oil. You must also help him to jump over the fire balls using keys 8 and 0.

Conveyor Belt was written for the 1K ZX-81 by Gerald Hayden, aged 15, of Tunbridge Wells, Kent.

```

10 LET L=20
15 LET S=0
20 PRINT AT 4,0;"XX";TAB 0;"XX
* * * * * * * *
30 LET A$=" * * * * * "
35 PRINT AT 4,2;A$( TO 30)
40 LET L=L+1+(INKEY$="8")
45 PRINT AT 4,L;"A"
50 IF INKEY$="0" THEN GOSUB 10
55 LET S=S+1
60 IF A$(L-1)="*" OR L=2 THEN
GOTO 200
70 LET A$=A$(2 TO )+A$(1)
80 GOTO 35
80 LET L=L+2
110 PRINT AT 4,L-2;" ";AT 3,L-1
;"A";AT 3,L-1;" ";AT 4,L;"A"
120 RETURN
200 PRINT AT 0,0;S

```



PLAYING the part of a crab you must eat as many starfish as you can before you run out of time or lives. Avoid the waves which will wash you away if you are caught. The game has very good graphics and sound.

Crab was written for the 16K Spectrum by P Hammond of Ipswich, Suffolk.

CRAABS

```

1 GO SUB 1000
2 GO SUB 1500
5 PAPER 6; INK 4; BORDER 6; C
LS
 6 LET c=0
 7 LET n=0
 8 LET d=0
 9 LET l=3
10 LET sc=0
11 LET g=300
12 LET r=0
20 LET e=0
30 LET l=18; LET y=15
31 IF t=0 THEN PRINT AT 21,2
61;"FOR q=0 TO 2: PRINT AT g
,0; INK 6;"(32*igB)": NEXT g: GO
TO 300
32CLS
35 LET a= INT ( RND *15)+3: LE
T b= INT ( RND *25)+3
40 PRINT AT x-1,y-1;" "
50 PRINT AT x-1,y-1;" ABC "
60 PRINT AT x,y-1;" D(ig8)E "
70 PRINT AT x+1,y-1;" FGH "
80 PRINT AT x+2,y-1;" "
81 LET t+=1: LET d= INT ( RND
*4)- INT ( RND *3): LET n+=d:
IF t#=f THEN GO TO 300
82 IF q=0 THEN IF t >= f-50 A
ND l=1 THEN FOR m=1 TO 5: FOR n
=1 TO 5: BEEP .001,60: BEEP .001
,50: NEXT n: PAUSE 5: NEXT m: LE
T q=1: IF t >= 300 THEN LET f=t
+50
83 IF n >= 30 THEN GO TO 400
84 PRINT AT a,b; INK 2;"_"
85 IF ATTR (x-1,y+1)=50 THEN

```

```

LET sc=c+1: BEEP .09,-30: BEEP
.09,-60: GO TO 30
87 PRINT AT 21,0;"TIME:";t; A
T 21,20;"LIVES:";1
90 LET x=x+( INKEY$ ="i" AND x
<18)-( INKEY$ ="o" AND x>2)
91 LET y=y+( INKEY$ ="w" AND y
<28)-( INKEY$ ="q" AND y>1)
92 IF INKEY$ <> " " THEN GO
TO 100
95 GO TO 40
100 PRINT AT x-2,y-1;" "
110 PRINT AT x-1,y-1;" 1B "
120 PRINT AT x,y-1;" K(ig8)L "
130 PRINT AT x+1,y-1;" MNO "
140 PRINT AT x+2,y-1;" "
141 BEEP .003,60: BEEP .003,30:
PAUSE 5: BEEP .003,60: BEEP .00
3,30
150 GO TO 40
300 IF t>1 THEN LET f=f+50: GO
TO 40
304 IF t=f THEN PRINT AT 8,10
;"OUT OF TIME": AT 21,5;t: GO TO
309
309 IF t <= 300 OR l=0 THEN PR
INT AT 8,10;"OUT OF LIVES": AT
21,5;t
309 FOR n=1 TO 3: BEEP .125,6:
BEEP .125,4: BEEP .125,2: NEXT n
: BEEP .4,6: BEEP .4,4: BEEP .4,
2
310 PRINT AT 21,0;"TIME:";t; A
T 21,10;"SCORE:";sc: AT 21,20;"L
IVES:";1: AT 10,10;"ANOTHER GAME
"
312 IF INKEY$ = "y" THEN GO TO
5
315 PAUSE 0
320 IF INKEY$ = "n" THEN STOP

```

```

330 GO TO 312
410 FOR n=33 TO 46: PRINT INK
;1; AT c,0;"(32*igB)": PAPER 1; I
NK 7; AT c+1,0;"SSSSSSSSSSSSSSSS
SSSSSSSSSSSSSSSSSSSS": PRINT INK 7;
AT c+2,0;"ORORRRORRRORRRORRROR
ORRRORRRORRR": BEEP .0005,n+3: BE
EP .0005,n
412 IF ATTR (x-1,y+1)=55 THEN
LET l=1-1: LET c=c+2: GO TO 500
415 IF c=13 THEN GO TO 500
420 LET c=c+1: NEXT n
500 FOR n=46 TO 33 STEP -1: PRI
NT INK 1; AT c,0;"(32*igB)": PA
PER 1; INK 7; AT c+1,0;"SSSSSSSS
SSSSSSSSSSSSSSSSSSSSSSSSSS": PRINT
INK 7; AT c+2,0;"ORORRRORRRORRROR
ORRRORRRORRRORRRORRR": BEEP .0005,
n+3: BEEP .0005,
n
501 BEEP .0005,n+3: BEEP .0005,
n
502 PRINT AT c+,0; "
505 IF c=0 THEN LET n=0: GO TO
30
510 LET c=c-1: NEXT n: GO TO 50
0
999 STOP
1000 FOR a=USR "a" TO USR "e"+7:
READ b: POKE a,b: NEXT a: RET
URN
1010 DATA 24,24,48,127,127,120,5
,6,60,0,0,68,40,40,40,60,126,24,2
,4,12,252,252,80,124,124,15,15,67
,127,191,31,57,255
1030 DATA 12,12,248,194,199,253,24
8,194,255,129,131,6,12,12,12,4,0
,255,255,60,24,0,0,0,0,249,193,2
24,48,48,32,0
1039 REM 2nd crab
1040 DATA 0,0,63,63,63,120,56,60
,0,0,254,254,254,60,124,124,15,1
5,3,3,7,31,121,103,124,124,194,1

```

```

99,224,248,158,230,207,59,51,49,
49,17,0,0,255,255,60;153,129,231
,195,0,243,204,204,140,136,0
,0
1049 REM starfish
1050 DATA 0,103,148,24,60,69,70,
32
1060 DATA 255,255,127,126,56,24,
0,0,255,62,30,28,28,12,12,0
1070 DATA 0,28,62,127,255,255,25
5,255
1500 BORDER 5: PAPER 5: INK 2: C
LS
1501 PRINT AT 3,11;"C R A B S"

```

```
1502 PRINT OVER 1: AT 3,11;"---
```

```
1505 PRINT AT 5,0;" YOU MUST
TRY TO EAT AS MANY STARFISH AS
YOU CAN BEFORE YOU RUN OUT OF L
IVES OR TIME."

```

```
1506 PRINT AT 8,0;" YOU HAVE
300 TIME UNITS TO START WITH A
ND THREE LIVES. IF YOU HAVE 2 O
R 3 LIVES LEFT WHEN TIME >= 300
THEN YOU WILL HAVE ANOTHER 50
UNITS ADDED. WHEN ONLY ONE L
IFE REMAINS & TIME IS >300 A BUZ
ZER WILL SOUND AND YOU WILL HAVE
50 TIME UNITS LEFT."

```

```
1507 PRINT AT 17,0;" THE KEYS A
RE:- 0=W: LEFT/RIGHT
O=I: UP/DOWN."

```

```
1508 PRINT AT 20,6;"BEWARE THE
WAVES!!"

```

```
1510 GO SUB 4000: PRINT #0: TAB
10;"PRESS A KEY": PAUSE 0: RETURN

```

```
4000 BEEP .25,12: BEEP .125,12:
BEEP .25,14: BEEP .25,12: BEEP .
125,9: BEEP .25,7: BEEP .125,5:
BEEP .25,4: BEEP .125,5: BEEP .4
0,12: BEEP .75,12
4010 PAUSE 10
4020 BEEP .25,12: BEEP .25,14: B

```

```
EEP .25,12: BEEP .125,B: BEEP .2
5,7: BEEP .125,5: BEEP .25,4: BE
EP .125,5: BEEP .75,14
4030 PAUSE 10
```

```
4040 BEEP .25,14: BEEP .40,16: B
EEP .25,14: BEEP .125,10: BEEP .

```

```
25,9: BEEP .25,7: BEEP .25,6: BE
EP .125,7: BEEP .40,14: BEEP .40
,12: BEEP .40,10: BEEP .25,9: BE
EP .125,6: BEEP .40,9: BEEP .40,
7: BEEP .40,9: BEEP .10,7: BEEP
.10,6: BEEP .10,7: BEEP .40,9: BE
EP .40,7: BEEP .40,44050 PAUSE 15
4060 BEEP .40,12: BEEP .25,14: B
EEP .25,12: BEEP .125,9: BEEP .2
5,7: BEEP .125,5: BEEP .25,4: BE
EP .125,5: BEEP .40,12: BEEP .75
,12
```

```
4070 PAUSE 15

```

```
4080 BEEP .40,14: BEEP .25,12: B
EEP .125,9: BEEP .25,7: BEEP .12
5,5: BEEP .25,4: BEEP .125,5: BE
EP .75,14
4090 PAUSE 5
```

```
5000 BEEP .25,13: BEEP .125,14:
BEEP .25,15: BEEP .125,14: BEEP
.25,15: BEEP .125,14: BEEP .25,1
5,1: PAUSE 6: BEEP .30,15: BEEP .1
25,10,5: BEEP .25,14: BEEP .125,
12: BEEP .25,14: BEEP .125,12: B
EEP .40,14: BEEP .125,12: BEEP .
25,10,5: BEEP .125,9: BEEP .25,7:
BEEP .40,14: PAUSE 10: BEEP .125
,9: BEEP .25,7: BEEP .125,9: BEE
P .75,5
5010 RETURN

```

POWER CRYSTAL

THE OBJECT of Power Crystal is to visit different locations to find a power crystal which will enable you to return to your own time. There are several places for you to

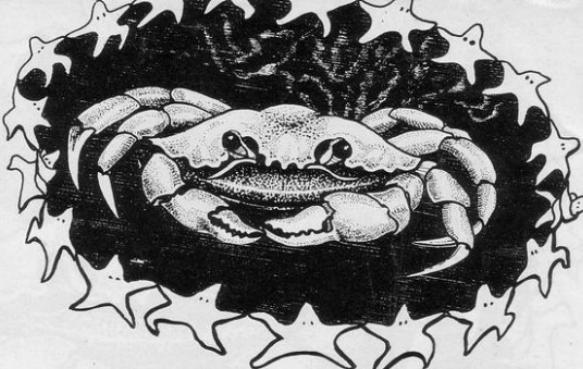
search, including the river, forest, lake and hills. N, S, E and W commands are used.

Power Crystal was written for the 1K ZX-81 by G Dahl of Norway.

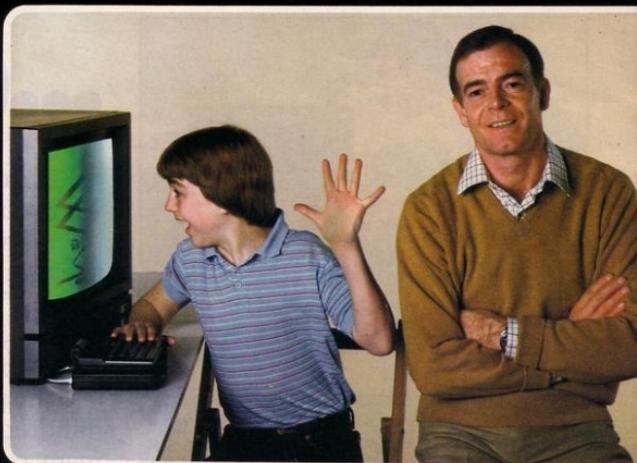
```

10 LET A$=GN PI
20 LET E$=NOT PI
30 LET W$=-R
40 LET S$=W+W
50 LET N$=S+W
70 DIM R$(VAL "5"),VAL "10")
X$="5332250114122534415
5"
80 LET A$(R) ="RIVER NSWE"
90 LET A$(-S) ="LAKE SEW"
100 LET A$(-N) ="FOREST NSEW"
110 LET A$(S*5) ="HILL NSW"
120 LET A$(VAL "5") ="CAVERN NS"
130 LET B=A
140 PRINT A$(B),,"WHAT NOW? "
150 INPUT A
160 LET A=VAL X$(B*5*5+R)
170 CLS
180 IF A THEN GOTO 130
190 PRINT "POWER CRYSTAL"
200 PRINT "CONGRATULATIONS"

```



Today, we talked to our user group, booked our holiday, zapped nine monsters, checked the football results, bought two games, looked at share prices, learnt some French, and conquered the universe!



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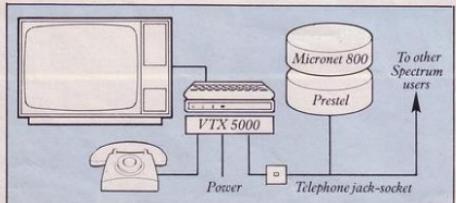
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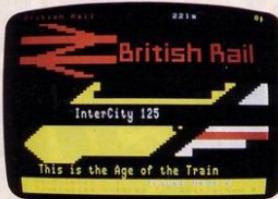
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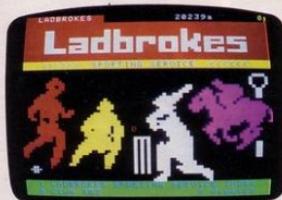
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LONDON RAID

FLY your aircraft over London and protect St Paul's from enemy bombs. Crashing into the cathedral will reduce your score but you will lose a life if you are hit by enemy fire or collide with an enemy aircraft.

London Raid was written for the 48K Spectrum by Julian Hagley of Windsor, Berkshire.



```

5 LET hi=0
10 GO SUB 9500
20 GO SUB 8500
30 GO SUB 8000
40 GO SUB 9000
1000 LET h= INT (( RND *1B)/3)+1
: FOR t=31 TO 0 STEP -1: PRINT
AT h,t; "
1010 LET h+=INT ( RND *3-1)
1020 IF h<1 THEN LET h=1
1030 IF h>8 THEN LET h=6
1040 PRINT INK 6; AT h,t; CHR# 145
1050 LET y=y+1: IF y >= 31 THEN
PRINT AT x,y-1;" : LET y=0
1060 IF ATTR (x,y)=7 THEN GO S UB 3500
1070 PRINT INK 4; AT x,y; CHR# 144; AT x,y-1;" :
1080 IF h== AND t=y THEN GO SUB 4000
1090 PRINT AT h, INT ( RND *31)
; INK h; CHR# 147
1110 IF RND >.93 THEN GO SUB 1 500
1120 FOR n=0 TO z: NEXT n
1130 BEEP .02,15
1140 LET i#= INKEY#
1150 IF i=="": THEN NEXT t
1160 IF i=="5" AND y>0 THEN PRI NT AT x,y;" : LET y=y-1: NEXT t
1170 IF i=="8" AND y<31 THEN PR INT AT x,y;" : LET y=y+1: IF ATTR (x,y)=7 THEN GO SUB 3500
1180 IF i=="7" AND x>1 THEN PRI NT AT x,y;" : LET x=x-1: NEXT t
1190 IF i=="6" AND x<21 THEN PR INT AT x,y;" : LET x=x+1: IF ATTR (x,y)=7 THEN GO SUB 3510
1200 IF i=="0" THEN GO SUB 2000
1210 NEXT t
1220 PRINT AT h,0;" : GO TO 10 00
1500 POKE 35050,45: FOR n=t-2 TO 1 STEP -1: PRINT INK 6; AT h,n ; CHR# 145
1510 PRINT AT h,n+1;" : RANDOMIZE USR 35049: IF h== AND n=1=y THEN GO SUB 2500
1520 NEXT n
1530 PRINT AT h,1;" : NEXT t
2000 POKE 35050,39: FOR n=y+2 TO 31 STEP 1: PRINT INK 4; AT x,n ; CHR# 45
2010 PRINT AT x,n-1;" : RANDOMIZE USR 35049: IF x=h AND n+1=t THEN GO SUB 3000
2020 IF ATTR (x,n+1)=7 THEN GO SUB 4500
2030 NEXT n
2040 PRINT AT x,31;" : NEXT t
2500 PRINT INK 2; AT x,y; CHR# 146;" : POKE 35001,17: RANDOMIZ E USR 35000: LET li=1:1; PRINT AT 0,6;11: PRINT AT x,y;" :
LET y=0: LET x=12: IF li=0 THEN GO TO 7500
2510 NEXT t
3000 PRINT INK 2; AT h,t-1;" :
CHR# 146: POKE 35001,17: RANDOMIZ E USR 35000: LET sc=sc+5: LET f=f+5: PRINT AT h,t;" : PRINT AT 0,17;sc;" : IF f=50 THEN GO SUB 7000
3010 GO TO 1000
3500 PRINT INK 2; AT x,y-1; CHR # 146: POKE 35001,11: RANDOMIZE USR 35000: PRINT AT x,y-1;" :
GO TO 3520
3510 PRINT INK 2; AT x-1,y; CHR # 146: POKE 35001,11: RANDOMIZE USR 35000: PRINT AT x-1,y;" :
3520 LET x=12: LET y=0: LET f=f-10: LET sc=sc-10: PRINT AT 0,17 ;sc;" : RETURN
4000 PRINT INK 2; AT x,y; CHR# 146;" : POKE 35001,29: RANDOMIZ E USR 35000: LET li=1:1; PRINT AT 0,6;11: PRINT AT x,y;" :
LET y=0: LET x=12: IF li=0 THEN GO TO 7500
4010 GO TO 1000
4500 PRINT INK 2; AT x,n; CHR# 146: POKE 35001,41: RANDOMIZE USR 35000: PRINT AT x,n;" : AT x ,y;" : LET y=0: LET x=12: LET f=f-10: LET sc=sc-10: PRINT AT 0 ,17;sc;" : NEXT t
7000 PRINT FLASH 1; PAPER 1; IN K 4; AT 3,13;" : BONUS
7010 FOR r=130 TO 0 STEP -3: OUT 160,-r; BEEP .007,-r/3: NEXT r
7020 LET sc=sc+30: LET f=0: PRIN T AT 3,13;" : AT x,y-1;" :
: RETURN
7500 PRINT INK 0; PAPER 5; FLAS H 1; AT 4,11;"GAME OVER"
7510 FOR a=1 TO 10: FOR b=0 TO 7 520 BORDER b; BEEP .02,b
7530 NEXT b: NEXT a
7540 POKE 23693,6: BORDER 0; CLS
7550 PAUSE 10
7560 FOR z=60 TO 0 STEP -3: BEEP .01,-60-z: BEEP .02,z; NEXT z
7570 PRINT : PRINT : PRINT
7580 LET c==" Your mission is ov er, you have lost all 3 of you r planes. Your score w as:=":
7590 LET n=30: GO SUB 7720
7600 PRINT INK 3; FLASH 1;sc
7610 IF sc>hi THEN LET hi=sc: G O TO 7650
7620 PRINT : PAUSE 40: LET c==" Unfortunately your score does not beat todays high of:=":
7630 LET n=15: GO SUB 7720
7640 PRINT INK 3; FLASH 1;hi: G O TO 7670
7650 PRINT : PAUSE 40: LET c==" However your score is the highest of the day."
7660 LET n=42: GO SUB 7720
7670 PRINT FLASH 1; AT 18,7;"AN OTHER GAME (y/n)"
7680 IF INKEY$ == "" THEN BEEP .02, RDN *15: GO TO 7680
7690 IF INKEY$ == "y" THEN CLS : FOR n=1 TO 25: NEXT n: GO SUB 8 700: INK 3: RANDOMIZE USR 35037 : PRINT AT 0,27;hi: GO TO 40
7700 IF INKEY$ == "n" THEN PRINT USR 0
7710 GO TO 7680
7720 FOR x=1 TO LEN c$: PRINT c $(x);: BEEP .1,n: NEXT x: RETURN
8000 POKE 23693,3: BORDER 0: CLS
8010 PRINT AT 0,0;"LIVES=3"; AT 0,11;"SCORE=0"; AT 0,22;"HIGH=0" ; POKE 23693,7
8020 RESTORE 8150: PLOT 66,0: FO R n=1 TO 35: READ a,b: DRAW a,b: NEXT n
8030 PLOT 101,80: DRAW 59,0,- PI
8040: FOR n=1 TO 18: READ a,b,c,

```

```

d: PLDT a,b; DRAW c,d: NEXT n: D
RAW 5,0; DRAW 0,8; DRAW -5,0,4

8050 CIRCLE 94,40,2; CIRCLE 181,
40,2; PLDT 94,40; PLDT 181,40
8060 FOR n=110 TO 150 STEP 10: P
LOT n,80; DRAW 0,-20; NEXT n
8070 FOR n=116 TO 144 STEP 7: PL
OT n,10; DRAW 0,20; NEXT n
8080 FOR n=94 TO 173 STEP 79: PL
OT n,25; DRAW 5,0; DRAW 0,-10; D
RAW -5,0; DRAW 0,10; NEXT n
8090 FOR n=90 TO 177 STEP 87: PL
OT n,46; DRAW 8,0; PLDT n,58; DR
AW 8,0; PLDT n+2,46; DRAW 0,12;
PLDT n+4,46; DRAW 0,12; PLDT n+6
,46; DRAW 0,12; NEXT n
8100 FOR n=103 TO 153 STEP 10: P
LOT n,78; DRAW 5,0; DRAW 0,-5; D
RAW -5,0; DRAW 0,4; NEXT n
8110 FOR n=106 TO 156 STEP 10: P
LOT n,58; DRAW 3,0; DRAW 0,-10;
DRAW -3,0; DRAW 0,10; NEXT n
8120 FOR n=103 TO 152 STEP 10: P
LOT n,40; DRAW 0,20; NEXT n
8130 PLDT 127,110; DRAW 3,3; DRA
W 3,-3; PLDT 130,113; DRAW 0,6;
DRAW 0,-2; DRAW 2,0; DRAW -4,0

8140 FOR n=1 TO 4: PLDT 130,110;
READ a,b,c; DRAW a,b,c; NEXT n

8150 DATA 0,4,4,18,0,10,2,0
,0,16,4,16,4,-16,0,-14,1,0,0,-6,
2,0,0,18,-2,0,0,-2,2,0,0,20,60,0,
0,-20,2,0,0,-2,-2,0,-18,6,0,-2
,0,0,-10,8,0,0,10,2,0,0,-2,2,0,0
,18,4,16,4,-16,0,-56,94,75,0,2,1
81,72,0,2,100,60,60,0,10,40,66,
0,66,-30,118,0,130,40,-14,-10,130
,40,-14,-10,66,10,118,0,88,30,0,-
20,162,30,0,-20,106,30,0,-20,-70,
34,0,2,88,30,0,4,100,40,0,-10,10
0,34,20,0,139,34,33,0,130,110,0,-
30,74,22,0,-8,-20,-30,1,-10,-30
,1,1,10,-30,-1,1,20,-30,-1
8160 FOR a=1 TO 150
8170 LET b= INT ( RND #7); LET c
= INT ( RND #255); LET d= INT (
RND #160); IF c>60 AND c<195 AND
d<120 THEN GO TO 8170
8180 PLDT INK b;c,d: NEXT a
8190 POKE 23693,31; RANDOMIZE US
R 35025; RETURN
8500 POKE 23693,71; BORDER 0; CLS

8510 PRINT FLASH 1; AT 10,8; FA
PER 7; INK 1;"INSTRUCTIONS (Y/N)"
8520 LET i#= INKEY#
8530 IF i#="" THEN BEEP .01, RN
D #35
8540 IF i#"n" THEN CLS : GO SU
B 8700; FOR n=1 TO 20; NEXT n: R
ETURN
8550 IF i#"y" THEN CLS : FOR n
=1 TO 20; NEXT n: GO TO 8570
8560 GO TO 8520
8570 GO SUB 8490
8580 PRINT AT 3,1;"It is your m
ission to shoot down as many
enemy air craft as possible. Eve
ry one destroyed will gain you
five points. However if y
ou fire and hit or should you cr
ash into St.Pauls then ten poin
ts will be lost. If you are s
hot by enemy air craft or cras
h into enemy craft then one life
will be lost."
8590 PRINT AT 17,9; INK 4; CHR#
144; INK 7;" THIS IS YOU"; INK
6; AT 19,9; CHR# 145; INK 7;" EN
EMY CRAFT"
8600 PRINT FLASH 1; INK 6; AT 2
1,6;"PLEASE PRESS ANY KEY": PAUS
E 0
8610 CLS
8620 GO SUB 8690
8630 PRINT AT 4,12;"CONTROLS"
8640 PRINT PAPER 2; AT 6,11;"UP
-7"; AT 8,11;"DOWN -6";
AT 10,11;"HOVER -5"; AT 12,11
;"THRUST -8"; AT 14,11;"FIRE
-0"
8650 GO SUB 8700
8660 PRINT INK 6; PAPER 0; FLAS
H 1; AT 21,0; PRESS ANY KEY
TO PLAY
8670 PAUSE 0
8680 CLS : FOR n=1 TO 20: RETURN

8690 PRINT AT 1,11; PAPER 1;"A
IR RAID": PLDT 87,159; DRAW 79,
0; DRAW 0,9; DRAW -79,0; DRAW 0,
-9; RETURN
8700 PRINT AT 21,0;"PLEASE SELE
CT LEVEL 1 TO 5(ascii)"
8710 IF INKEY# <1" OR INKEY#
>"5" THEN GO TO 8700
8720 LET z=(VAL INKEY#)-1):5;
FOR n=1 TO 20; NEXT n: RETURN

9000 LET y=0; LET x=12; LET f=0;
LET sc=0; LET l=1:#3: RETURN
9500 RESTORE 9520: FOR a=USR "a
" TO USR "d"+7: READ b: POKE a,
b: NEXT a
9510 RESTORE 9560: FOR n=0 TO 73
: READ a: POKE 35000+n,at NEXT n
: RETURN
9520 DATA 0,16,152,255,152,16,0,
0
9530 DATA 0,8,25,255,25,8,0,0
9540 DATA 16,66,72,1,20,68,8,34
9550 DATA 1,0,0,0,0,0,0,128
9560 DATA 17,10,0,33,10,0,6,14,1
97,213,229,205,181,3,1,100,0,225
,237,74,209,193,16,240,201,33,0,
64,17,200,175,1,192,26,237,176,2
,01,33,200,175,17,0,64,1,192,26,2
37,176,201,1,1,7,33,255,0,17,10,
0,229,213,197,205,181,3,193,209,
229,125,145,111,16,242,251,201

```

DALEK RAID

```

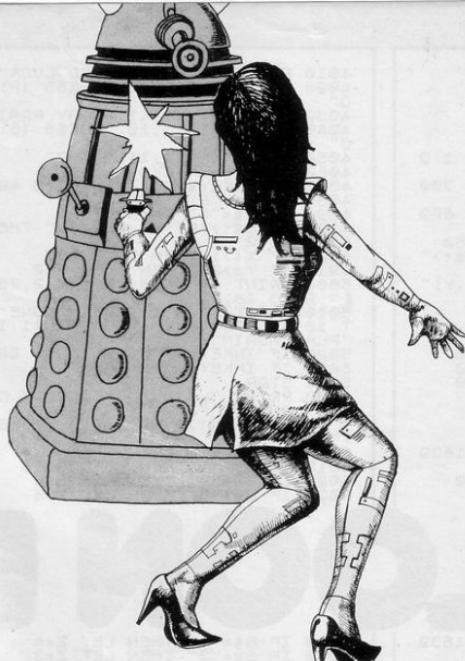
5 DIM a$(5,5): DIM b$(2,5)
6 GO SUB 9000
7 BORDER 6: PAPER 6: INK 0: C
LS
8 GO SUB 9100
9 CLS
10 LET h#=0;
12 LET a#(1)="
13 LET a#(2)=" ABC "
14 LET a#(3)=" DEF "
15 LET a#(4)=" GH1 "
16 LET a#(5)=" JK1 "
17 LET b#(1)=" MM "
18 LET b#(2)=" DF "
19 LET c#=30
20 LET xxx= INT ( RND *6)+3: LE
T y#=0
25 CLS
30 LET i= INT ( RND #7);
40 LET dr#=1
60 LET a#=12: LET b=6
200 GO SUB 8000
210 PRINT AT a,b; INK 2;"X": P
RINT AT a,b; ":"; OVER 0

```

PREVENT the dalek releasing the other daleks you are holding prisoner by firing at it with your twin lasers. If the dalek reaches the bottom it will open the gate and your prisoners will escape.

Dalek Raid was written for the 48K Spectrum by Melvin Carter of Aston, Birmingham.





8999 RETURN
9000 REM *****graphics

9001 FOR f = USR "a" TO USR "e"+
7: READ a: POKE f,a: NEXT f
9005 REM dalek head *****

9010 DATA 0,4,7,4,0,0,0,0,1,31,2
40,32,63,21,63,21,128,192,32,16,
240,B0,240,B0,0,0,0,0,128,127,12
B,1,63,42,106,106,255,255,255,12
B,240,168,168,168,248,252,252,4

9015 REM dalek body *****

9020 DATA 1,3,3,2,2,2,4,5,0,109,
109,0,205,205,0,141,4,180,178,2,
178,178,2,178,9,8,19,51,32,127,1
27,127,141,0,25,25,0,255,255,255
153,1,141,141,1,255,255
9025 REM destroyed head *****

9030 DATA 0,1,37,2,85,64,20,86,3
2,144,0,54,74,144,166,217,9,50,8
7,147,42,39,23,23,204,233,86,23
4,230,105,75,255

9035 REM floor graphic

9040 DATA 0,0,60,66,153,60,255,2
55

9045 REM laser graphics

9050 DATA 3,3,4,8,48,60,126,255,
192,192,32,16,12,60,126,255

9060 RETURN

9100 PRINT " DALEK RAID
BY MELVIN CART
ER PRESS A KEY TO
PLAY

***** IMPORTANT DISTANCES
AGE CAPS LOCK"

9150 PAUSE 0: CLS : PRINT "
DALEK RIAD This game is not for the weak hearted. You have been warned. The objective of this game ??? is to save the multicoloured DALEK PRISONERS you captured. (It took a long time to capture them so don't lose!!!!) you can shoot them with your twin lasers. Sounds simple huh, the game ends when the DALEK reach the bottom.
PRESS A KEY"

9200 PAUSE 0: CLS : PRINT : PRIN T "Oh, by the way some DALEKS cannot be seen, but if you fire your lasers where the lasers cross the DALEK he will show through, you should be able to shoot it then if not then
BYE BYE !!!

POINTS =10 for each DALEK except an invisible DALEK which is worth 50 POINTS

*****IMPORTANT*****
*** you lose 10 points every shot except when you hit a DALEK ***

9300 PRINT . FLASH 1; INK 2;"PRES S A KEY TO FIND OUT WHERE TO HIT DALEKS"

9400 PAUSE 0: CLS : PRINT " MOVE YOUR TARGET SIGHT (X) UP U SING KEY Q DOWN
USING KEY A LEFT
USING KEY O RIGH T USING KEY P FIRE
USING KEY M "

9500 PRINT : PRINT "WHEN DALEKS TRAVEL BACKWARDS HIT THEM ABC DEF GHK HERE JKL WHEN DALEKS

TRAVEL FOREWARDS HIT THEM ABC DEF GHK HERE JKL WHEN DALEKS

ABC

```

1 GOTO 8500
5 CLS
10 LET X=18
15 LET Y=30
20 GOTO 6000
25 CLS
30 PRINT "DO YOU WANT MAZE 1 0
R 35"
40 IF INKEY$="1" THEN GOTO 700
50 IF INKEY$="2" THEN GOTO 800
60 IF INKEY$="" THEN GOTO 50
70 IF INKEY$="" THEN GOTO 50
80 IF INKEY$="1" OR INKEY$(>)
"2" THEN GOTO 50
90 PRINT AT X,Y;"0";AT X+1,Y;""
X+RT X+2,Y;"■"
100 GOTO 4900
110 FOR N=1 TO Z
120 IF B$=INKEY$
130 IF B$="0" THEN GOTO 1400
140 IF B$="1" THEN GOTO 1500
150 IF B$="2" THEN GOTO 1800
160 IF B$="" THEN NEXT N
170 GOTO 2000
180 STOP
190 PRINT AT X,Y-1;
200 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
210 IF C$="+" THEN GOTO 4000
220 PRINT AT X+1,Y-1;

```

```

230 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
240 IF C$="+" THEN GOTO 4000
250 PRINT AT X+2,Y-1;
260 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
270 IF C$="+" THEN GOTO 4000
280 PRINT AT X,Y;" ";AT X+1,Y;""
X+RT X+2,Y;"■"
290 PRINT AT X+2,Y;"0";AT X+1,Y;""
300 GOTO 800
310 PRINT AT X+3,Y;
320 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
330 IF C$="+" THEN GOTO 4000
340 PRINT AT X,Y;" ";AT X+1,Y;""
X+RT X+2,Y;"■"
350 GOTO 800
360 PRINT AT X,Y+1;
370 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
380 IF C$="+" THEN GOTO 4000
390 PRINT AT X+1,Y+1;
400 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
410 IF C$="+" THEN GOTO 4000
420 PRINT AT X+2,Y+1;
430 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
440 IF C$="+" THEN GOTO 4000
450 PRINT AT X,Y;" ";AT X+1,Y;""
X+RT X+2,Y;"■"
460 LET Y=Y+1
470 PRINT AT X,Y;"0";AT X+1,Y;""
X+RT X+2,Y;"■"
480 GOTO 800
490 PRINT AT X-1,Y;
500 LET C$=CHR$(PEEK(1639
8+PEEK(16399*256))
510 IF C$="+" THEN GOTO 4000
520 PRINT AT X,Y;" ";AT X+1,Y;""
X+RT X+2,Y;"■"
530 LET X=X-1
540 PRINT AT X,Y;"0";AT X+1,Y;""
X+RT X+2,Y;"■"
550 GOTO 800
560 PAUSE 5

```

```

4010 PRINT AT 9,11;"HARD LUCK"
4020 PRINT AT 10,10;"PRESS (P) T
O"
4030 PRINT AT 11,11;"PLAY AGAIN"
4040 PRINT AT 13,10;"PRESS (S) T
O"
4050 PRINT AT 14,14;"STOP"
4060 LET B$=INKEY$
4070 IF INKEY$="" THEN GOTO 4060
4080 IF B$="P" THEN RUN
4090 IF B$="S" THEN STOP
4100 IF B$="P" OR B$(<)S" THEN
GOTO 4070
4110 IF X>1 THEN GOTO 900
4120 IF X>29 THEN GOTO 900
5000 PRINT AT 1,28;"F";AT 2,28;""
5010 HT 3,28;"L"
5020 PRINT AT 9,11;"WELL DONE";A
5030 IF INKEY$="" THEN GOTO 5020
5030 IF INKEY$="P" THEN RUN
5040 STOP
5050 PRINT "WHICH DIFFICULTY DO
YOU WANT TO PLAY (1-6)?
(1-HARDEST,6-EASIEST
")
5060 LET B$=INKEY$
5070 IFF B$="" THEN GOTO 5010
5080 IF B$="6" THEN LET Z=6
5090 IF B$="5" THEN LET Z=5

```

BALLOON BU

```

6040 IF B$="4" THEN LET Z=4
6050 IF B$="3" THEN LET Z=3
6060 IF B$="2" THEN LET Z=2
6070 IF B$="1" THEN LET Z=1
6080 GOTO 35
7000 CLS
7100 PRINT "+++++++
7110 PRINT "+++
7120 PRINT "++
7130 PRINT "+
7140 PRINT "++ + ++++++
7150 PRINT "++ ++++++
7160 PRINT "++ ++++++
7170 PRINT "+++
7180 PRINT "+++++
7190 PRINT "+++++
7200 PRINT "++ + + ++++++
7210 PRINT "++ + + +
7220 PRINT "++ + +
7230 PRINT "++ + +
7240 PRINT "++ + + + + +
7250 PRINT "++ + + + +
7260 PRINT "++ +++++ + +
7270 PRINT "++ + +
7280 PRINT "++ + +
7290 PRINT "++ + +
7300 PRINT "+++++
7310 PRINT "+++++
7320 GOTO 320
8000 CLS

```

IRST



THE BALLOON you are in floats up on its own so you cannot control changes in its ascent. You can, however, move the

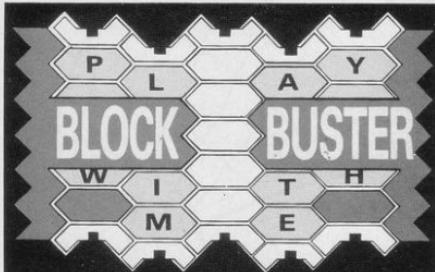
balloon left, right and down, using the cursor keys. There are two mazes from which to choose and you must guide the balloon round the maze, avoiding the walls which will burst the balloon. Having done that you must then land on the target.

Balloon Burst was written for the 16K ZX-81 by Adrian Blair of Co Tyrone, N Ireland.

```

8005 PRINT "+++++++"  
8010 PRINT "+++++++"  
8020 PRINT "++++++"  
8030 PRINT "+++" +++++++  
8040 PRINT "+++" +++++++  
8050 PRINT "+++" + + +  
8060 PRINT "+++" + + +  
8070 PRINT "++" ++ +  
8080 PRINT "++" + +  
8090 PRINT "++" + + +  
8100 PRINT "++" ++ + +  
8110 PRINT "++" ++++++  
8120 PRINT "+++" + + +  
8130 PRINT "+++" + + +  
8140 PRINT "+++" + + +  
8150 PRINT "+++" + + +  
8160 PRINT "+++" + + +  
8170 PRINT "+++" + + +  
8180 PRINT "++" ++++++  
8190 PRINT "+++" ++++++
8200 PRINT "++++++" +++++++  
8210 PRINT "++++++"  
8220 GOTO 320  
8230 CLS  
8240 PRINT "++++++" INSTRUCTIO  
NS  
8250 PRINT AT 2,21;"0";AT 4,21;"  
8260 PRINT AT 3,0;"YOU ARE IN A  
BALLOON(X), AND YOU;"  
8270 PRINT AT 6,22;"■";AT 8,22;  
8280 PRINT AT 7,0;"MUST REACH TH  
E TARGET(■) USING"  
8290 PRINT AT 9,0;"THE CONTROLS.  
BUT THE BALLOON FLOATS UP ON  
ITS OWN, THEREFORE YOU CANNOT CO  
NTROL IT'S MOVEMENT."  
8300 CLS  
8310 PRINT "++++++" INSTRUCTIO  
NS  
8320 PRINT  
8330 PRINT AT 5,12;"5=LEFT";AT 8  
12;"6=DOWN";AT 10,12;"8=RIGHT"  
8340 PRINT AT 15,0;"+++++PRESS (P)  
TO CONTINUE+++++"  
8350 IF INKEY$="P" THEN GOTO 860  
8360 IF INKEY$<>"P" THEN GOTO 880  
8370 CLS  
8380 PRINT "++++++" CONTROLS  
8390 PRINT
8400 PRINT
8410 PRINT AT 5,12;"5=LEFT";AT 8  
12;"6=DOWN";AT 10,12;"8=RIGHT"  
8420 PRINT AT 15,0;"+++++PRESS (P)  
TO CONTINUE+++++"  
8430 IF INKEY$="P" THEN GOTO 860  
8440 IF INKEY$<>"P" THEN GOTO 880  
8450 IF INKEY$<>"P" THEN GOTO 880

```



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```

LS 1 PAPER 2: INK 7: BORDER 2: C
2 GO SUB 9000
15 LET x=3
17 LET z$="BATTLE"
18 FOR y=1 TO LEN z$
19 PRINT AT x,y+10;2#
20 BEEP .01,y
24 NEXT y
26 IF x>20 THEN GO TO 30
26 IF x>20 THEN GO TO 30
27 CLS
28 GO TO 17
30 PRINT AT 10,5; INVERSE 1;"DO YOU WANT INSTRUCTIONS?"
35 IF INKEY$=="y" THEN GO TO 9900
36 IF INKEY$=="n" THEN GO TO 39
37 IF INKEY$=="" THEN GO TO 38
38 GO TO 35
39 INK 7: PAPER 1: BORDER 1: C
LS
40 LET w=48
45 PLOT w,0; DRAW 0,175
47 LET w=w+8
48 IF w>207 THEN GO TO 50
49 GO TO 45
50 LET x=0
55 PLOT 48,x; DRAW 159,0
56 LET x=x+8
57 IF x>175 THEN GO TO 60
58 GO TO 55
60 PLOT 48,175; DRAW 159,0; DR
AW 0,-175
70 PRINT AT 0,0;"Player"; AT
1,29;"1"; AT 0,26;"Player"; AT 1,
29;"2"
80 PRINT AT 3,3; INK 2;"a"; A
T 3,29; INK 6;"a"
85 LET a=10; LET b=6; LET c=10
: LET d=25
87 LET a$="a"; LET b$="a"
88 LET g$="1"
90 PRINT AT a,b; INK 2;a$#
91 PRINT AT c,d; INK 6;b$#
110 PRINT AT 10,0;"YOUR"; AT 1
1,1;"GO"
160 IF INKEY$=="5" THEN PRINT
AT a,b;" "; LET b=b-1; GO TO 1
170 IF INKEY$=="8" THEN PRINT
AT a,b;" "; LET b=b+1; GO TO 1
175 IF INKEY$=="6" THEN PRINT
AT a,b;" "; LET a=a+1; GO TO 1
180 IF INKEY$=="7" THEN PRINT
AT a,b;" "; LET a=a-1; GO TO 1
90
185 IF INKEY$=="0" THEN GO TO
500
189 GO TO 90
190 PRINT AT a,b; INK 2;z$#
195 PRINT AT 10,0;" "; AT 1
1,1;""
200 PRINT AT 10,27;"YOUR"; AT
11,28;"GO"
210 IF INKEY$=="o" THEN PRINT
AT c,d;" "; LET d=d-1; GO TO 3
00
220 IF INKEY$=="p" THEN PRINT

```

GRID BATTLE is a game for two players, written for the 16K Spectrum by Gary Win-stanley, aged 13, of Wigan, Lancs. The object is to calculate your move so that you get within four squares of your opponent. You can then fire at your opponent, providing it is your move, and destroy him. Player 1 moves using the cursor keys and 0 to fire and player 2 uses keys O, P, Q, A and M.

```

AT c,d;" "; LET d=d+1; GO TO 3
230 IF INKEY$=="q" THEN PRINT
AT c,d;" "; LET c=c-1; GO TO 3
240 IF INKEY$=="a" THEN PRINT
AT c,d;" "; LET c=c+1; GO TO 3
250 IF INKEY$=="m" THEN GO TO 600
260 GO TO 210
300 PRINT AT c,d; INK 6;"A"
310 PRINT AT 10,27;" "; AT
11,28;" "
320 GO TO 90
500 IF c>a+4 OR c=a-4 OR d>b+4
OR d=b-4 THEN PRINT AT c,d;"B"
505 IF c > a+4 OR c > a-4 OR
d > b+4 OR d > b-4 THEN GO TO
510
510 PRINT AT 21,0; FLASH 1;"PLAYER 1 WINS"
520 PRINT AT 10,10;"ANOTHER GA
ME?"#
525 IF INKEY$=="y" THEN GO TO 39
530 IF INKEY$=="n" THEN STOP
532 IF INKEY$=="=" THEN GO TO
535 GO TO 525
600 IF a=c+4 OR a=c-4 OR b=d-4
OR d=b+4 THEN PRINT AT a,b;"B"
605 IF a >= c+4 OR a >= c-4 OR
b >= d+4 OR b >= d+4 THEN GO TO
610
610 PRINT AT 21,0; FLASH 1;"PLAYER 2 WINS"
620 GO TO 520
8999 STOP
9010 FOR a = USR "a" TO USR "b" +
a: RETURN
9020 DATA 0,0,24,60,60,24,0,0
,129 9030 DATA 0,145,90,124,56,28,118
9900 PAPER 1: BORDER 1: INK 7: C
9910 PAPER 1: BORDER 1: INK 7: C
INSTRUCTIONS: AT 1,10; =====
9920 PRINT AT 3,0;"BATTLE is
a game of strategy where you mu
st manoeuvre your ship around
the board avoiding your opponen
te range of fire. When your op
ponent is four squares away
he can fire at you providing it
is his turn to move"
9930 PRINT AT 15,0;"PLAYER 1 ca
n move one square at a time usin
g the cursor keys.. Time usin
g 0."
9940 PRINT AT 15,0;"PLAYER 2 ca
n move around the board usin
g 'D,A' respectively, usin
g 'M'."#
9935 PRINT AT 21,10; FLASH 1;"A
NY KEY": PAUSE 0
9940 GO TO 39

```

CHIRPER

PLAYING the part of **Chirper**, you look after your nest in which four eggs are about to hatch. Unfortunately, there is some fungus preventing you from tending the nest, so you have to destroy it with egg bombs. If you are successful you will see your eggs hatch before passing to a more difficult round. If you crash or fail you will be taken away by the angel bird.

Written for the 16K Spectrum by Toby Smith, aged 12, of Basingstoke, Hampshire.



```

10 LET x=0: LET y=0
20 LET l=3
30 LET s=0
40 LET hs=0
50 LET sk=10
60 LET sk=10
70 GO TO 9000
80 GO SUB 9500
900 REM Set up screen
910 BORDER 5; PAPER 5; INK 7; C
LS
530 PRINT AT 21,0; INK 4;"(32*
igB)"
540 PRINT #1; AT 0,0; INK 4;"(3
2*igB"
550 PRINT #1; AT 1,0; INK 4;"(3
2*igB"
555 PRINT #1; AT 0,0; INK 0; PA
PER 4;"LIVES="; FOR a=1 TO 1; PR
INT #1; AT 0,6+a; INK 7; PAPER 4
;"A"; NEXT a
560 PRINT AT 19,27; INK 7;"000
@; AT 19,27; OVER 1; INK 0;"H%
$"; AT 19,27; OVER 1;"(g5:ig5:g5
:ig5"
570 PRINT AT 20,27; PAPER 5; I
NK 0;"(g7:2*igB:ig4)"
580 BEEP .5,14; BEEP .5,11; BEE
P .8,11; PAUSE 4; BEEP .5,12; BE
EP .5,9; BEEP .8,9; PAUSE 4; BEE
P .5,7; BEEP .5,9; BEEP .5,11; B
EEP .5,12; BEEP .5,14; BEEP .5,
1; BEEP .6,7
1000 REM MAIN loop
1010 BEEP .002,0; PRINT AT x,y;
INK 2; "CDE"
1020 GO SUB 2000
1030 IF INT (RND *10) >= 3 THE
N GO SUB 3000

```

```

1040 IF ATTR (x,y+4) <> 47 THEN
GO TO 8000
1050 LET y=y+1: IF y=27 THEN PR
INT AT x,y-1;" "; LET x=x+1:
LET y=0
1060 IF x=18 AND y=26 THEN GO T
O 6000
1070 PRINT #1; AT 0,15; PAPER 4;
INK 1;"SCORE=";s: GO TO 1000
2000 IF INKEY$ ="" THEN RETURN
2005 LET b=y
2010 FOR a=x TO 19
2020 BEEP .02,a; PRINT AT a+1,b
+2; INK 7;"A"
2030 PRINT AT a,b+2; INK 7;" "
2040 PRINT AT x,y; INK 2;" CDE"
: IF y=27 THEN PRINT AT x,y?
": LET x=x+1: LET y=0:
2045 IF x=18 AND y=26 THEN GO T
O 6000
2050 IF ATTR (x,y+4) <> 47 THEN
GO TO 8000
2060 IF ATTR (a+2,b+2) <> 47 TH
EN PRINT AT a+2,b+2; INK 1; F
LASH 1;"E": BEEP .005,-10: LET s=
s+1
2070 LET y=y+1
2080 NEXT a
2090 LET s=s-1: LET y=y-1: RETUR
N
3000 FOR a=4 TO INT (RND *24+4
) STEP INT (RND *4+3)
3010 IF ATTR (21,a) <> 169 AND
ATTR (20,a) <> 41 THEN FOR d=2
TO 0 x+= INT (RND *7+5): STEP -1
: BEEP .0004,30: PRINT AT d,a;
INK 1;"B": NEXT d
3015 NEXT a
3020 RETURN
6000 IF ATTR (20,27) <> 40 OR
ATTR (20,28) <> 40 THEN BEEP .3
,-30: BEEP .05,25: BEEP .005,20:
PRINT AT 2,5; FLASH 1; INK 6;
PAPER 0;"You (iBrill:EiiW:spipi:
IP) your nest!": PRINT AT 15,0;
INK 2; PAPER 6;"ACDEPress any k
ey to restart!DEA": LET x=0: LET
y=x: PAUSE 20: PAUSE 0: LET l=1
:-1: GO TO 500
6010 PRINT AT 18,23; INK 1;"CDE
"; INK 6;"AAA"
6050 BEEP .5,14; BEEP .5,11; BEE
P .8,11; PAUSE 4; BEEP .5,12; BE
EP .5,9; BEEP .8,9; PAUSE 4; BEE
P .5,7; BEEP .5,9; BEEP .5,11; B
EEP .5,12; BEEP .5,14; BEEP .5,
1; BEEP .6,14; PAUSE 4
6060 BEEP .5,14; BEEP .5,11; BEE
P .8,11; PAUSE 4; BEEP .5,12; BE
EP .5,9; BEEP .8,9; PAUSE 4; BEE
P .5,7; BEEP .5,11; BEEP .5,14;
BEEP .5,14; BEEP .8,7
6070 FOR a=27 TO 30: PRINT AT 1
B,a; INK 3;"G": BEEP .8,20; NEXT
a
6080 BEEP .4,2; BEEP .4,11; BEE
P .4,2; BEEP .4,11; BEEP .4,2; BE
EP 1,11; PAUSE 3; BEEP .2,11; BE
EP .2,11; BEEP .2,11; BEEP .2,11
: BEEP .5,9; BEEP .5,9; BEEP .9,
7
6090 FOR a=18 TO 2 STEP -1: LET
s=s+5: PRINT #1; AT 0,15; FLASH
1; INK 2; PAPER 6;"SCORE=";s: BE
EP .5,50: PRINT AT a,27; OVER 0

```

```

;" PRINT AT a,27; OVER 1;
INK 1;" : PRINT AT a,27; O
VER 1; INK 1;" ]]]]; AT a,27; OV
ER 1;" [[[[; AT a+1,27; OVER 0;
"DDDD"; AT a+1,27; OVER 0;" ";
AT a-2,27; OVER 0;"GGGG"; NEXT
a
6100 LET sk:=k-1; LET l=1+l; LET
x:=0; LET y:=; IF sk < 2 THEN
LET sk=2; LET l=1-1; IF l=0 THEN
    LET l=1
6110 IF INKEY# = "" THEN GO TO
6110
6120 GO TO 500
8000 FOR a=0 TO 10: PRINT AT x,
y+1; INK INT ( RND *7); PAPER
INT ( RND *7); OVER 1; CHR# ( RN
D *131+33); CHR# ( RND *131+33);
CHR# ( RND *131+33); BEEP .02,-
INT ( RND *301; NEXT a
8010 FOR a=0 TO 10: BEEP .05,-30
: BEEP .05,-20; NEXT a
8015 FOR a=0 TO 20: PRINT OVER
1; INK 2; AT a,y+1;"CDE"; OVER 1
; PAPER 6; AT a,y+1;"///"; PRINT
AT a-1,y+1;" "; : NEXT a
8020 BEEP 2,-40
8030 FOR a=0 TO y+1: PRINT AT 0
;a; INK INT ( RND *4); "CDE"; B
EEP .01, .01; INT ( RND *50); NEXT a
8040 FOR a=1 TO 19: PRINT AT a,
y+2;" "; BEEP .08,10; NEXT a; BE
EP .1,0
8050 FOR a=20 TO 1 STEP -1; PRIN
T AT a,y+1; INK 7; "A "; BEEP .
009,20; PRINT AT a+1,y+2;" ";
NEXT a
8060 FOR a=y TO 27: PRINT AT 0,
a; INK INT ( RND *5); "CDE"; IN
K 7; AT 1,a+2;" A "; BEEP .1,20;
NEXT a
8070 LET x:=0; LET y:=; LET l=1-1
: IF l=0 THEN GO TO 8500
8080 GO TO 500

```

```

9080 PRINT AT 21,3; INK 0; PAPE
R 5;"PRESS ANY KEY TO EGGBUM"
9090 PRINT #1; AT 0,0; INK 7; PA
PER 3;"AAAAApressAnyKeyAt0p1
ayAAAAA"
9100 PAUSE 0; GO TO 80
9500 FOR q=0 TO 55; READ w; POKE
USR "a"+q,w; NEXT q
9505 RETURN
9510 DATA 24,60,44,110,110,94,94
,60
9520 DATA 63,63,110,220,220,220,
126,63
9530 DATA 0,248,63,15,127,63,3,0
9540 DATA 0,126,255,190,185,167,
159,126
9550 DATA 48,120,206,223,254,248
,192,0
9560 DATA 170,69,176,13,169,189,
126,126
9570 DATA 16,40,124,84,56,56,124
,254

```



Quick



Draw

QUICK DRAW can READ DATA from REM lines so that the machine code takes the data from the Basic. If you look at the listing you will see that PLOT is used to move the drawing position, as on the Spectrum. A USR line follows and then a REM DATA line. The data in that line represents co-ordinates and not pixel displacements.

If the draw data is a variable you will

be unable to use a REM line and must use POKE statements. The program was written for new ROM machines but has a few lines added which make it compatible with the Mk 1 ROM.

Care should be taken when typing-in lines 1 to 25. After the program has been ENTERED it should be SAVED twice before being RUN. If the demonstration program works you can then delete the whole listing, starting with

the bottom lines, apart from lines 1 and 2. Removing line 2 will cause the program to crash.

The program gives three demonstrations using the drawing routine and after deleting the lines specified more enthusiastic readers can add their own drawing program.

Quick Draw was written for the 16K ZX-81 by Barry Nicholson of Hebburn, Tyne and Wear.



```
5 LET C$=C$+"3E00214240772377  
237723773A3E406F2600E53A3C406FD1  
A7EBED520053E01324240C8C7C280C7C  
F2677D2F6F233E01324340224540224A  
403A3F406FE53A3D406FD1R7EBED5220
```

```
5 LET C$=C$+"053E01324240CB7C  
280C7C2F677D2F6F233E013244402248  
40E52B4R40D1R7ED52F28R412B48402248  
4A403E013245403A4240C647C2034233A  
4A40470E0179C5CDB341C179C5E5CDD8
```

```
    7 LET C$=C$+"41C1453E9B323040
CDB20BC10C10E6C9CD1D153A4840CD1D
15EF04343A4R40CD1D15EF0534CD470E
2R3C403A4340CB47200209C9A7EDC42C9
CD1D153A4840CD1D15EF04343A4R40CD
"
"
```

```
8 LET C$=C$+"1D15EF0534CDA70E  
2A3D403A4440CB47200209C9A7ED42C9  
3A4540CB647202F3A4R40470E01692600  
C5E53R3C406FD13A4340CB4720031918  
03A7ED523A3D40474D3E9B323040CD82
```

```
9 LET C$=C$+"0BC10C10D8C93A4A  
4047E001692600C5E53A3D406FD13A44  
40CB472003191803A7ED523A3C404F45  
3E9B8323040CDB20BC10C10D8C9"  
10 REM *** HEX LOADER ***  
11 LET D=15514
```

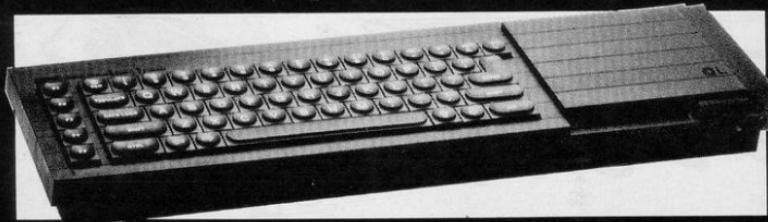
```
12 FIRST
13 FOR I=1 TO LEN C$ STEP 2
14 POKE A,16*(CODE C$(I)-28)+C
15 CODE C$(I+1)-28
16 LET A=A+1
17 NEXT I
```

```

18 IF PEEK 3875=205 AND PEEK 5
24 =40 THEN GOTO 100
19 REM * ADJUST FOR MK.1 ROM *
POKE 1683200,005
POKE 1683205,005
POKE 1683210,005
POKE 1683215,005
POKE 1683220,005
POKE 1683225,005
100 REM *** DEMONSTRATION ***
105 SLOW
110 LET DRAW=16514
115 LET VARIABLE DRAW=16553
120 PRINT "CASTLE"
125 PLOT 37,19
130 LET Q=USR 0,DRAW
135 LET Q=USR 0,DRAW
140 LET Q=USR 0,DRAW
145 LET Q=USR 0,DRAW
150 LET REM 10,-5,10,37,20,37,20,34;
155 LET REM 10,-5,10,37,20,37,20,34;
160 LET REM 10,-5,10,37,20,37,20,34;
165 LET PLOT 0,0,DRAW
170 LET Q=USR 0,DRAW
175 PRINT AT 2,5," ";AT 2,
180 ..";PRINT AT 7,10," ";AT 7,
185 ..";PRINT AT 10,11;" ";AT 10,20
190 PAUSE 250
195 CLS
200 PRINT "INKBLOT"
205 RAND
210 FOR I=1 TO 50
215 LET X1=31
220 LET Y1=31
225 LET X0=INT (RND*60)
230 LET Y0=INT (RND*40)
235 PLOT X1,Y1
240 POKE 160446,X0
245 POKE 160447,Y0
250 LET Q=USR VARIABLE DRAW
255 NEXT I
260 PRINT "CHEERS"
265 PLOT 35,3
270 LET Q=USR DRAW
275 REM 40,10,44,10,44,10,45,9,45,7,4
280 ..;45,5,45,3,44,2,42,2,41,3,41,
285 ..;
290 PLOT 0,50,8
295 LET Q=USR DRAW
300 REM 40,5,44,7,47,10,48,11,4
305 ..;11,51,59,10,52,14,54,12,54,1
310 ..;15,55,16,55,18
315 PLOT 57,1
320 LET Q=USR DRAW
325 REM 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
330 ..;54,5,17,59,20,59,4,56,4,5
335 ..;0,0,0,17
340 *****STOP*****
345 SAVE "QUICK DRAW"

```

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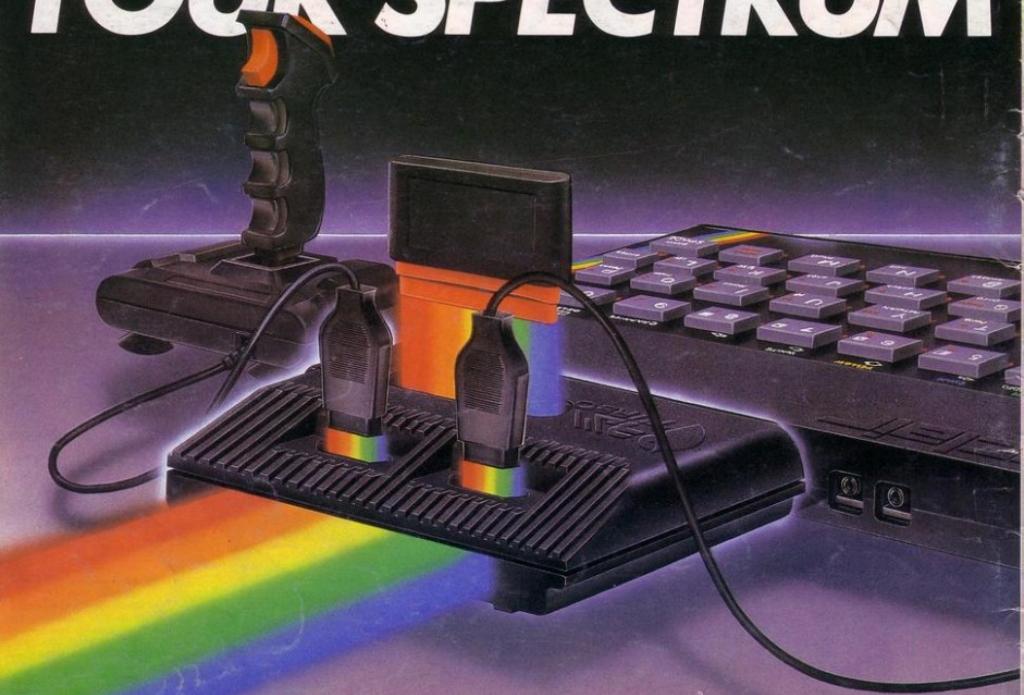
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